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38, though there are divergences, not cyclical alone, on the way. This end-to-end agreement increases the probability that the coverage of our estimates of annual investment, and the assumption of long-run stability in the appropriate numbers of years' purchase, are both correct, but it could also arise from both erring in the same direction. We have adopted the results of the first method, which is undoubtedly preferable to the second in the short run, and does not much differ from it in the long.

2.2. The stock of capital, and annual investment, as we have delimited them, comprise houses, but not other consumers' equipment; and all revenue-producing buildings, equipment and stocks, except farmers' capital and the element of capital accretion in land. The stock of houses amounts in value to some two-fifths of the whole. No assets outside the United Kingdom are included.

2.3. The most doubtful elements in our estimates of annual net investment are depreciation, and changes in stocks. We have assumed that the trend of depreciation in 1870–1913 was that of national income, and in 1924–38 that of Schedule D allowances, while its year-to-year variations were at all times those of gross investment. Our estimates of changes in stocks rest on the assumption that the value of stocks is at all times 40% of national income.

2.4. The relation between the capital stocks of 1913 and 1924 is specially doubtful. The pre-war years we have based on Stamp's capitalisation of property incomes assessed in 1914; but his later published capitalisation of the assessments of 1928 uses different methods, and produces results which, if regarded as estimates of current replacement value, imply very improbable changes in the physical stock of capital since 1913. We have therefore made our own estimates for 1924, based for buildings on the changes in the total number of houses and in building costs since 1913, and for industrial and commercial capital on the assumption that real equipment per occupied person was the same in 1924 as in 1913.

2.5. The reduction of all buildings, equipment and stocks to a single physical total raises the familiar difficulties of index numbers, but in a special degree, because of the great changes which have occurred in the technical forms of capital goods. In effect, our procedure is to take certain standard components, those namely which enter into our index of the prices of capital goods, and, as other equipment crops up, enter it in terms of these components, according to its current opportunity cost. Alternatively, the procedure may be summarised as the comparison of capital stock and income with one another year by year, when

each is reduced from its current money value to real terms by an appropriate price index; and it is intelligible to say "nowadays we are carrying about four days' food consumption in our larder, but a year ago we were carrying five," even though the dietary at the two dates was different.

3.0. We shall express our main series of capital and income as amounts per head of the occupied population. If we wish to consider the rate of growth of aggregates, therefore, we have to multiply the changes in our own series by that in occupied population, which is shown in Fig. 1. Down to 1913 we have virtually a constant growth curve. War casualties, and the withdrawal of

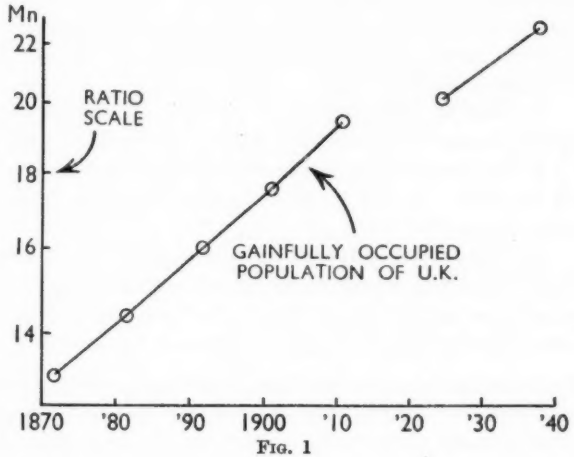

FIG. 1

Southern Ireland, enter into the difference between 1913 and 1924. The growth between 1924 and 1938 remains rapid, and is greater than that of population as a whole.

4.0. Our results show three relations which we may call stable, not because they do not change from year to year, but because the changes in them are not sustained within each of our spans 1870–1913 and 1924–38 considered separately. Between 1913 and 1924, it is true, shifts occurred which were not only big but persistent; yet the system, having accepted this displacement, proceeded with its former stability. It is also true, however, that the movements require explanation no less than the stability, and that the stability of the national aggregates does not appear in their components separately, and we must consider these things in their turn.

The three stable relations are illustrated by Figs. 2 and 3. They are:

4.1. Over the whole span, capital has grown at about the same rate as income: both real capital a head and real income a head have nearly doubled. This relation implies that technical change has followed in the main a particular course which we can express in various ways—

(*a*) Invention has been neutral, in Mr. Harrod's sense,[1] between labour-saving and capital-saving improvements.

(*b*) The amount of current productive powers embodied in equipment a head has been stable; while the equipment with which the average man worked was twice as great in 1938 as in 1870 if we reckon it in units of brick and steel, it was virtually unchanged if we reckon it with output per head as our unit.

(*c*) The capital coefficient, or ratio of capital stock to annual income flow, has been stable. It declined from about 3·7 in the seventies to 3·3 in the nineties, and rose again to 3·9 in 1912. In the inter-war years it moved from about 4·0 to 3·6.

(*d*) Output per physical unit of capital has been stable: the tendency to diminishing returns, with increases in the quantity of equipment of given types per unit of labour, has been offset by technical improvements in those types.

4.2. Earnings were much the same proportion of home-produced national income[2] just before 1914 as they had been in the 1870s, namely about 55%; between 1913 and 1924 the proportion was raised, to about 66%, from which it did not greatly diverge down to 1938. In the absence of marked divergences in the receipts of occupied persons other than wage- and salary-earners, this implies the similarly stable relations between real earnings per employee and real home-produced income (or output) per occupied person, which are shown in Fig. 2.

4.3. The rate of return on capital of all kinds (Fig. 3) relating yield in £s with replacement cost, both being expressed in 1912/3 £s, remained between 10 and 11% throughout most of 1870–1913; from 1924 to 1938 it fluctuated about a level of 7½%. Constancy in the rate of return on equipment, while output a head was rising,

[1] R. F. Harrod, *Towards a Dynamic Economics*, pp. 22–8.

[2] By home-produced national income we mean total net national income minus property incomes from overseas. It includes receipts from the overseas activities of British firms so far as these receipts are within the scope of the British tax-collector.

implies that the proportion of the average man's income that he must give up to obtain a year's use of a unit of equipment has

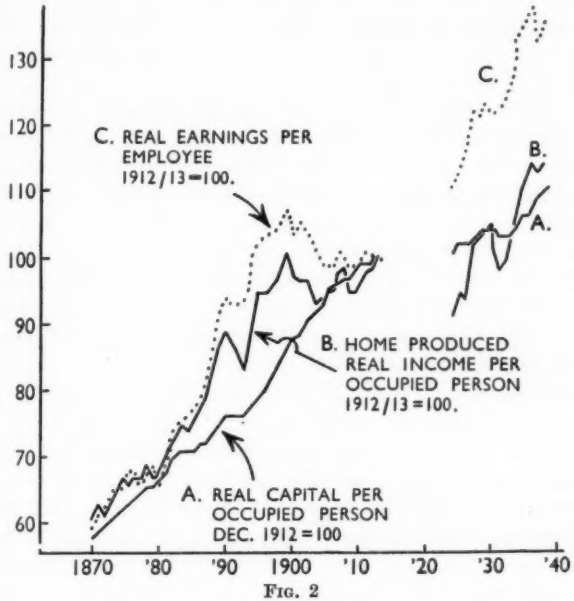

FIG. 2

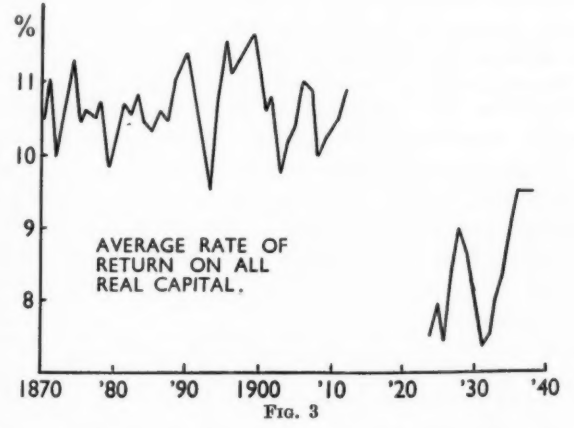

FIG. 3

fallen. To hire a wage-earner for a year he had to give up about 48% of his own annual income in the 1870s, about 55% in the 1930s; but the use for a year of a piece of equipment worth £100

in 1912 cost him about 15% of his income in the 1870s, 10% in 1900–13, and 8% in 1924–38. Here is a virtuous spiral of accumulation: the more equipment was held, the lower was the cost of using equipment relatively to the cost of using labour, and the greater therefore the inducement to increase still further the equipment of the average worker.

5.0. These three relations are, of course, not independent. Given the neutrality of invention, for instance, and the stable ratio of earnings to total income, we can deduce the stability of the rate of return to capital: if capital and income have grown at the same rate, and earnings have been a stable proportion of all income, then the total return to capital has borne a stable ratio to all income, and hence to the stock of capital itself, so that the return to the unit of capital must have been stable. Similarly, we can show that if the neutrality of invention and the stability of the return to capital are given, the stability of the share of earnings in all income follows. Which elements are the actual determinants of economic growth and which is only their by-product? The neutrality of invention may be a fact of history, imposing a partioular course of adjustment on the market-place; or it may be brought about in response to market forces, firms pressing harder to achieve economies in the construction of equipment, and improvements in its design, when the rate of return on existing types of equipment falls off. Of the other two elements, we might give primacy to the stable share of earnings in income, deriving it from a general propensity of firms to check divergences from some normal relation between direct cost and price,[1] in which case, given the neutrality of invention, the stability of the return to capital will be the by-product; or we might suppose that managerial adjustment acts directly to normalise the rate of return on capital, and in that case it will be the stability of the share of earnings which is the by-product. But in either case, the long-recognised fact of the comparative stability of the division of the national income between work and property now appears as the joint outcome of the neutrality of invention and a stable propensity of entrepreneurial behaviour. Both determinants are necessary: if output could be raised, for example, only by accumulating more and more capital per unit of output, then to stabilise the ratio of direct cost to price would progressively reduce the return per unit of capital, and to stabilise the return per unit of capital would lower the share of earnings in national

[1] Para. 13 of Phelps Brown and Hart, "The Share of Wages in National Income," ECONOMIC JOURNAL, LXII, June 1952, p. 246.

income. But when invention is neutral, a propensity of firms to stabilise either the ratio of direct cost to price, or the return per unit of capital, will result in the other being stabilised too. It may be that the line of determination runs differently in different firms or periods, that the active pressure has been in some times and places towards the adjustment of price to cost, and in others towards the maintenance of a normal dividend, but in the presence of the neutrality of invention each pressure reinforces the other.

6.0. The stability we have been considering did not exclude

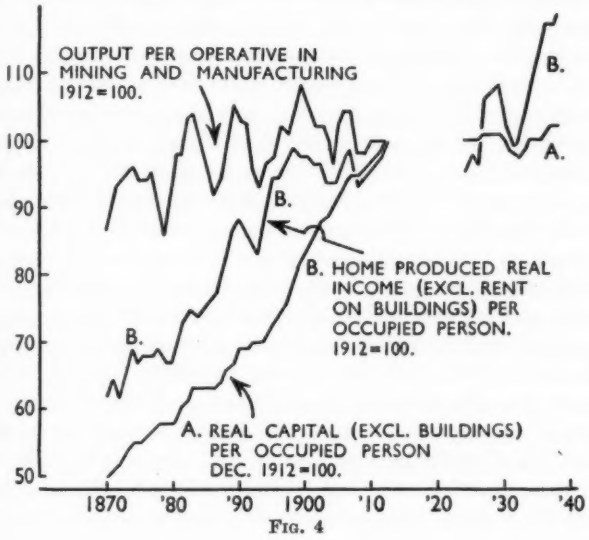

FIG. 4

some marked divergences. Fig. 2 shows how from 1880 to near 1900 real income rose faster than the stock of capital; then from 1900 to 1913 real income a head hardly rose at all, whereas the stock of capital a head continued to increase; but in the inter-war years, once again income rose faster than capital.

To study these changes it is useful to take the stock of buildings and the income received on them away from the totals of capital and income, and concentrate our attention on the remainder, which broadly we may call the industrial sector. In Fig. 4 we can trace three phases in the relative movements of output and capital here. Through "the Great Depression" real output and the stock of capital moved together, both rising, when expressed as amounts per occupied person, by more than 40% in twenty-five years.

From 1895 to 1913 real output a head hardly rose at all, whereas capital a head rose by much the same annual increments as before. How capital and output were related in 1924, by comparison with 1913, we cannot exactly say, for our estimate of the change in the stock of capital over that interval is uncertain; but it does seem clear that in our third phase, from 1924 to 1938, real output rose substantially more than the stock of capital.

6.1. These divergences are too great to be dismissed as a matter of the error of estimate. Formally, the divergence from 1895 to 1913 represented a rise in the capital coefficient, and that between 1924 and 1938 a fall. More substantially, we may say that in the first period steady accumulation could only take the form of the extension of equipment of existing or only moderately improved types, but in the second a very low rate of accumulation went with the coming into being of new techniques, which only now obtained a general application and exploitation on the large scale. It is probable that before 1895 "the Great Depression" had been dominated by the same sort of widespread fruition of techniques, at that time those of steam and steel. Comparison in Fig. 4 of the movements of output a head in the whole national economy and within mining and manufacturing alone suggests that mining and manufacturing were already progressing more slowly before 1895, and that it was especially to economies of transport that the more rapid rise of national output before then was due. (A clear type of capital-saving change is the fuller exploitation of equipment such as a railroad which has had to be on the large scale from the first.) In the 1890s this impetus seems to have given out; adding one steel steamship to another, even though the new one was of improved design, could make no such difference as substituting a steel steamship for a sailing-ship. New techniques were being developed—electricity, the internal-combustion engine, chemical engineering and the synthetic fibres—but only after the First World War did they attain massive application. When they did, they brought about for the time being a substantial rise in the standard of living of a people which had then virtually ceased to add to its industrial equipment.[1]

[1] This argument is developed more fully in Phelps Brown and Handfield-Jones, "The Climacteric of the 1890's," *Oxford Economic Papers*, October 1952. The sources of rising productivity in the inter-war years are examined in R. S. Sayers, "The Springs of Technical Progress in Britain, 1919–39," ECONOMIC JOURNAL, LX, June 1950. Dr. Rostas gives the rise in output per wage-earner in British manufacturing, 1924–37, as 37% (p. 43 of his *Comparative Productivity in British and American Industry*).

6.2. But the fifteen years down to 1914 confront us with not merely a slower rate of rise in output a head than before, but a failure of output a head to rise at all, and this despite a continued steady rise in the physical amount of equipment a head, which increased by more than a sixth. This suggests the presence of some actively adverse factor, such as the exhaustion of natural resources might be in some economies, and in the coal-mines at least was in Britain at this time; or a decreased efficiency, or annual effort, of managers and men.

6.3. Whether the above lines of explanation be accepted or not, the facts they attempt to explain of themselves justify the inference that capital accumulation bears an uncertain relation to industrial productivity, the movements of which may be dominated for a quarter of a century at a time by the course of technical development, with little dependence on the contemporary rate of accumulation. This inference raises again the question whether the comparative stability of the capital coefficient which we have found from end to end of our period is only a matter of where those ends happen to fall, or whether there are in fact normative tendencies at work, to check the merely labour-saving extension of equipment of constant type, and push enterprise forward into the development of new and capital-saving techniques, so as to check the variation of the capital coefficient in the long run. The same inference suggests that it is not realistic, in models of the expanding economy, to postulate any constant relation between the rates of growth of capital and output. It also shows the danger, in practical planning, of counting upon any sustained rate of rise in productivity.

7.0. The separation of the building and industrial sectors also brings to light divergences in the rate of return on capital. The main data are shown in Fig. 5.

7.1. The rate of return which we estimate for buildings is the ratio of the total of rents (so far as this is recorded by the Schedule A assessments) to a total replacement value reckoned by valuing the physical stock of buildings at current building costs. This rate rose from 4 to over 6% between 1870 and 1895, and remained around 6% until 1913. In 1924 (though both terms of the ratio are now more uncertain) it seems to have been much lower again, at about 3½%, from which it recovered to around 5% in the later 1930s. The dominating factors here seem to be the stickiness of money rents, reinforced after 1913 by rent restriction, and the movements of the price level, including building costs. Thus the rate rose down to 1895 because money rents were slow

to fall at a time when building costs fell substantially [1]; from 1895 onwards money rents must have risen nearly enough to keep pace with the rise in building costs; the doubling of costs between 1913 and 1924 was not matched by anything like an equal rise in rents, but costs then fell somewhat while money rents rose.[2]

7.2. In the sector which excludes buildings, and which we call the industrial sector, the rate of return was very stable, apart, of course, from cyclical fluctuations, at about 15%, from 1879 to 1900; it had been rather higher, around 17 and 16%, in the 1870s, and from 1900 to 1913 it was rather lower, around 14%. In the inter-war years it fluctuated about 11%. Over the period as

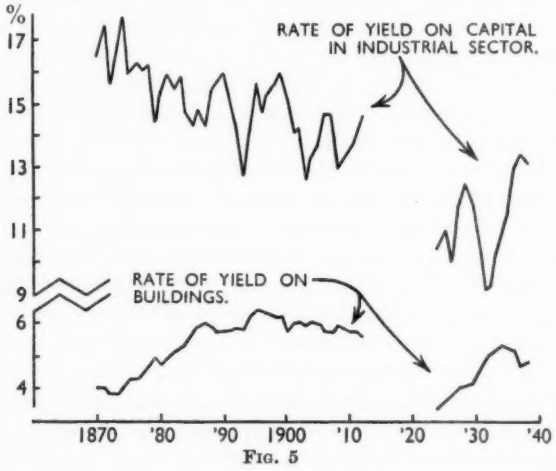

FIG. 5

a whole it might perhaps be held to show a falling trend, which agrees with expectations of a decline in the return to capital as accumulation proceeds; but the shift between 1913 and 1924 was the outcome probably of the post-war deflation, not of accumulation, and the expectations themselves are justified only in the absence of capital-saving innovations. We therefore do best to consider the successive levels of the rate of return each in its historical setting, rather than as the outcome of a single underlying relation.

[1] An index of rents in London and twenty large towns is given in *British and Foreign Trade and Industrial Conditions* (Cmd. 2337 of 1904) as follows:

1880	86·6	1890	98·9	1900	100
1885	90·1	1895	96·3		

[2] The index of rents within the coverage of the Ministry of Labour cost-of-living index number stood at 147 (1914 = 100) in 1924 and 159 in 1937.

The lower rate of return prevailing at home after 1900 throws its light on the growth of foreign investment after 1904. The money profits of existing enterprises were no doubt generally higher than in the last two decades before 1900, but the rate of return we have estimated here, being the ratio of the current receipts on a piece of equipment to its current replacement cost, comes nearer the return to new investment, and this seems to have been actually lower than before 1900.

8.0. We should expect to be able to trace some connections between the rate of return on real capital, the rate of interest, and the rate of accumulation.

The rates of return given here are not, it is true, direct estimates of the marginal efficiency of capital: they are marginal to the extent that they are reckoned on replacement cost, but they are derived from aggregate and not marginal receipts, and when the returns to existing equipment are as sticky as they are in housing, the changes of aggregate receipts may be a poor guide to those of marginal. But for most kinds of equipment a change which raises marginal yields will raise average too, so that though we do not measure the actual inducement to invest at any one time, we can at least expect that the changes in what we do measure will be in the same direction as those in that inducement.

The rate of interest is also difficult to measure. The yield of gilt-edged, it is true, is readily come by, and has some claim to be regarded as a basic rate; but to the extent that security-holders take trends of the purchasing power of money into account, a fixed-interest security becomes a peculiar type of asset. There is a margin of varying width, moreover, between the yield of gilt-edged and the rate of return required by the provider of funds to industry, and it is mainly the latter rate that concerns us here. An estimate of the changes in it may be made as follows. The price (p) of a given portfolio of industrial equities may be expected in the long run to vary *directly* with the general level of prices (π), and with the rate of return (R) currently obtained per unit of industrial capital, and *inversely* with the yield (y) required by the provider of funds to industry, or

$$p = \text{constant times } \frac{\pi R}{y}.$$

$$\text{Then } \quad y = \text{constant times } \frac{\pi R}{p},$$

and we can calculate the right-hand side in index-number form from available indexes. The outcome is shown, together with

indexes of the yield on fixed-interest securities and of the general level of product prices, in Fig. 6.

Can these indications of changes in the price of loanable funds to industry be connected on the demand side with the rate of return to capital in industry, or on the supply side with the quantity of funds provided?

8.1. Comparison of the index of the yield of industrial equities (or terms of borrowing) in Fig. 6, with the rate of return on industrial capital in Fig. 5, shows both agreement and divergence. Between 1870–73 and 1887 both series came down by about an eighth, but then the rate of return rises again, until 1900, whereas

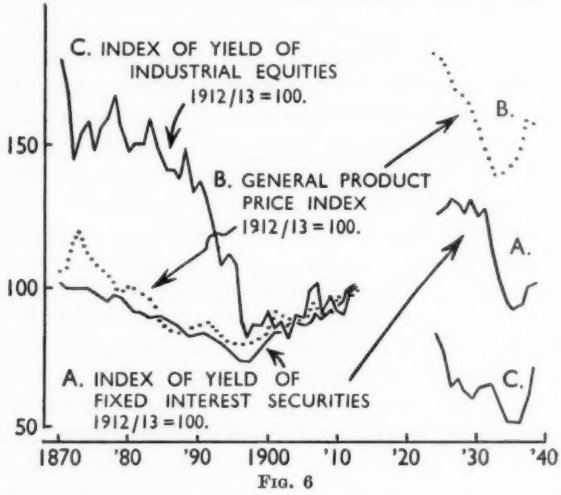

FIG. 6

the terms of borrowing come down by another 40%. After 1900 neither series changes very much down to 1912, but on the whole the rate of return comes down and the terms of borrowing go up. By 1924 there is the same big change in both, a fall of about a quarter; but thenceforward the rate of return lies about an upward trend, the terms of borrowing about a downward. In sum, there is enough agreement, especially in the big change between 1912 and 1924, to suggest some connection; and on general grounds we should not expect this connection to be close, because annual investment can make so small a proportionate change within a few years in the total stock of capital. What connection there was, moreover, was displaced in the 1890s by a big fall in the terms of borrowing; we naturally look for the cause of this in the contemporary increase in the supply of money. We conclude that the

terms of borrowing appear to be connected with the marginal efficiency of capital, but the relation between them can be displaced by changes in the supply of money without setting up quickly corrective reactions.

8.2. To trace the connection between the price of loanable funds and the quantity of funds supplied, we have on the one side our index of the terms of industrial borrowing, based on an index of home borrowers' equities alone, and on the other estimates of net accumulation at home and overseas. In a period which saw the drastic curtailment of overseas investment after the Baring crisis, and its six-fold increase again between 1903 and 1907, we cannot assume a constant agio between the rates at which the investor would lend at home and abroad, by virtue of which an index of the terms of home lending might serve for the terms of lending in the aggregate: in effect, if the investor worried less about the risks of overseas investment, he raised the terms open to him. We can, however, make some mental allowances: to be representative of the terms of borrowing of all kinds, our index of the terms of industrial borrowing should go above its actual course in the periods when overseas investment was rising relatively to home, that is, from 1877 to 1890, and from 1903 to 1913; and go lower in 1873–77, 1890–1903 and 1913–24. Now with these adjustments, the index does show quite close association with the movements of the proportion of national income saved, taking accumulation at home and overseas together. This proportion is shown in Fig. 7. From 1870 to 1913 it fluctuated cyclically about a norm which was near 10% most of the time, but seems to have been higher in the early 1870s, and was evidently rising through 1893–1913; in 1924–38 it had been pushed down, to 5 or 6%. Thus the facts do not disprove the hypothesis, that a higher price for loanable funds calls forth a greater supply, and conversely.

8.3. But they may have another explanation: they would have come about if fairly constant proportions both of earned income and profits were saved irrespective of the price offered for savings, and the proportion of profits saved were the larger.[1]

[1] Let total savings S by made up of a constant proportion of earned income E plus a constant proportion of all other income, or property income, P.

$$S = \alpha E + \beta P$$

If we divide through by national income we can express each variable as a proportion of national income; let this be represented by the corresponding small letter:

$$s = \alpha e + \beta p.$$

Also we have $e = 1 - p.$

Then $s = \alpha + (\beta - \alpha)p,$

and s will vary in the same direction as p if $\beta > \alpha$

For in that case the proportion of national income saved would rise and fall with the share of profits in national income, and Fig. 7 shows that it has in fact done so. The effect would be even more marked if, as is likely, the proportion of profits saved rises and falls with the level of profits themselves. Two pieces of evidence support this interpretation. First, a detailed study of firms' reserve allocations in the inter-war years [1] shows that the proportion of profits put to reserve was generally higher, the higher were profits themselves: which departs from the assumption of

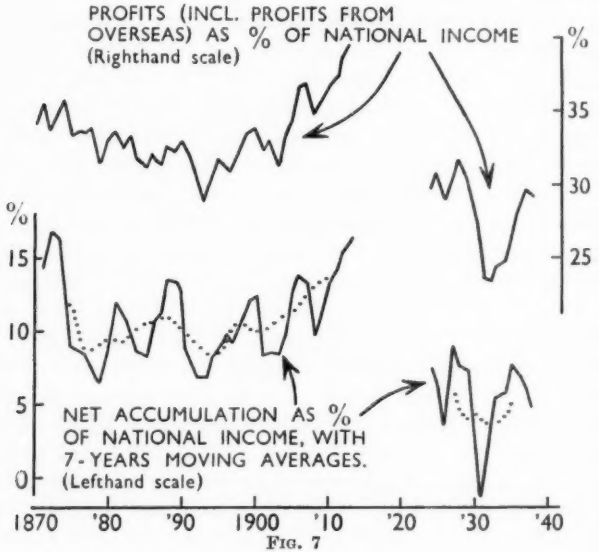

FIG. 7

simple proportionality in the direction which would bring out the observed effect *a fortiori*. Second, there are indications, independent of the data of Fig. 7, that the proportion of profits saved was substantially higher than that of earned incomes before 1914, though perhaps not in the inter-war years; and that the fall in the proportion of national income saved between 1914 and the inter-war years went with a sharp reduction in the proportion of profits, but not of earned incomes, saved. These indications are shown in Table I, which sets out particulars of some of the main components of saving out of earned income which we can trace through both periods. These particulars suggest that from 3 to

[1] R. S. Hope, "Profits in British Industry from 1924 to 1935," *Oxford Economic Papers*, N.S., I, June 1949, p. 2; especially para. 50 and Table V.

5% of wages and salaries were saved, before 1914 and in 1924–34; whereas the proportion of profits and rents saved was over 25% before 1914, but under 10% in 1924–34.

TABLE I

Certain Institutional Savings as a Proportion of Total Net Accumulation in the U.K.[1]

	Average £Mn.	
	1901–13.	1924–34
1. Net increases in		
(*a*) Savings certificates	—	5·1
(*b*) P.O. and Trustee Savings Banks—		
(i) Due to depositors . . .	4·2	14·6
(ii) Govt. stock held for depositors .	1·4	−18·3
2. Building societies		
(*a*) Net increase in amounts due to depositors, shareholders and other creditors. .	1·4 [2]	37·3
(*b*) Effective repayment of mortgages, estimated at 5% of outstanding total [3] .	2·8	14·1
3. Life insurance		
(*a*) Net increase in funds	10·7	32·9
(*b*) 75% of claims paid, less surrenders [4] .	11·5	24·6
4. TOTAL (1)–(3)	32·0	110·3
5. Total net accumulation.	242	207
6. Ratio of (4) to (5)	13·2%	53·3%

[1] See E. A. Radice, *Savings in Great Britain 1922–1935*. Data from *Statistical Abstract* and *Reports of the Chief Registrar of Friendly Societies*. We can trace categories 1 (*b*) and 3 back to the 1880s, when together they bore about the same relation to total net accumulation as in 1901–13.

[2] Average excludes 1911.

[3] The total repayment of mortgages is believed to be too high as a measure of savings, because many repayments are made out of the proceeds of sale of the property, and it is believed that 5% of the balances due on mortgages is a better approximation to the actual savings under this head.

[4] It is assumed that much the greater part, say three-quarters, of claims paid is reinvested, so that there is a channel of savings under this head additional to the net increase of insurance funds after claims have been met.

8.4. In sum, the record is consistent with a straightforward supply-and-demand analysis for loanable funds, in that changes in the terms of lending were fairly closely associated with those in the rate of return on capital, and when those terms were higher the proportion of national income saved was higher; but these changes in the proportion of national income saved were also closely associated with changes in the share of profits in national income, and there are independent grounds for believing that this association was significant. The mainspring of the whole action, indeed, may be the relative size of profits, and changes in this can account for the associated movements in the proportion of national income saved and in the rate of return on capital, without leaving more than a subsidiary influence to the supply-and-demand functions of the market for loanable funds. What

those changes in the share of profits do not at first seem able to account for, however, is the associated movement (subject to some displacement) of the actual terms of lending. We shall now show how changes in both the share of profits and the terms of lending can possibly arise out of one and the same process.

9.0. This account rests upon the observed association, which Fig. 6 illustrates, between the movements of the general level of prices and those of the terms of lending. It is true that between 1913 and 1924 the association was broken: evidently when prices and costs have been lifted bodily to a quite new level, there is no presumption that the terms of lending will have been raised too; but apparently when the trend of prices was gradually but persistently downwards, from 1873 to 1895, and similarly upwards, from 1895 to 1913, the terms of lending moved in much the same way. There is good reason to believe that this association extends much farther back. For despite the possible peculiarity of the price of a fixed-interest stock, the index of the yield of such stocks in Fig. 6 shows considerable agreement with the terms of lending to industrial borrowers, the gap which appears in 1924 being explicable by the great increase meanwhile in the quantity of fixed-interest stock; and if then the long-term course of change in the yield of fixed interest stocks can be taken as an indication of changes in the terms of lending to industry, we can trace these changes a long way back. In that case we have the well-established fact of the "Gibson paradox" [1]—the inverse relation between the trend movements of the general price level and the price of Consols—to make it probable that throughout the nineteenth century and down to 1914 the terms of lending were stiffening when the general price-level was on an upward trend, and conversely.

9.1. How do we account for it? Keynes' explanation was, in effect, that the rates charged to borrowers are in practice sticky, so that when the rate of return on equipment (he says "the natural rate of interest") is rising, for example, and entrepreneurs are trying to borrow more, the actual terms of lending, though they do rise, do not do so quickly enough to keep the supply of savings and the demand adjusted, and credit is created in excess of voluntary savings, and prices rise; conversely on a fall. Now the mainspring of this process would be a change in the rate of return on equipment sufficiently sustained to keep ahead of the actual terms of lending that are moving after it for as much as twenty-five years together; but our present material

[1] J. M. Keynes, *A Treatise on Money*, II, c. 30 (viii).

makes it appear rather doubtful whether any such changes in the rate of return have taken place, and still more so whether there have been any that were coterminous with phases in the trends of prices and the rate of interest.

Any alternative explanation must provide, as Keynes did, both a motive force to carry the process on, and a mechanism which makes the terms of lending not merely higher when prices are rising than when they are falling, but successively higher at each stage of the rise. One such explanation begins by noting that whether the rate of interest moves in the same direction as the product price level, or the opposite, depends on the quarter from which the original impulse comes. There are two cases, well explored in the trade cycle, in which the rate of interest and the price-level move in opposite directions: when the original impulse comes from an expansion or contraction of the monetary base or of credit, and when it comes from a change in the liquidity preference of the public. Two other cases, at least, are conceivable in which the movements will be in the same direction. The first occurs when there is a change in profit expectations or the marginal efficiency of capital. The second is found when the price-level itself is taking the initiative, and moving under the influence of a preponderant expectation about the likelihood and feasibility of rises or falls in product prices, which itself has been built up by such factors as changes in raw-material costs, costs of manufacture and competitive pressures, and the expected availability of credit, which have been comprised under the term " the market environment." [1] Any explanation of trend movements of the price-level and the rate of interest persisting in the same direction through several trade cycles together must be based on factors capable of equal persistence. Profit expectations hardly seem capable of a life sustained beyond the phases of the trade cycle. But the factors of the market environment do have this longer life. We conceive them as imparting a gentle but continuing motion to the price-level, and this in turn puts some effective pressure on the monetary system to adapt the supply of money to it.[2] But this adaptation encounters resistance. If prices have risen, for instance, so that firms need to hold more units of money in the aggregate in their working balances, the monetary system may be able to provide some but not all of these, and the remainder must be sought by inducing transfer from idle balances: firms selling

[1] Cf. paras 15–17 of Phelps Brown and Hart, " The Share of Wages in National Income," ECONOMIC JOURNAL, LXII, June 1952, p. 246.

[2] Cf. *A Treatise on Money*, VI, 30, pp. 204–6.

securities to raise cash provide this inducement by raising the rate of interest. Similarly, if prices have fallen sufficiently, despite any rise in physical turnover, to liberate working balances, the monetary system may make some reduction in the total stock of money, but some units surplus to working requirements may remain, and the holders of idle balances must be induced to take them over by a fall in the rate of interest. So long, moreover, as the liquidity preference of the holders of idle balances does not move against the gradual trend of prices, does not fall, for instance, when prices are rising, each such process will be cumulative, successive rises in prices requiring successive reductions of idle balances, and therefore successive rises in the rate of interest. Further, the banking system may not merely respond with some inertia to the prevailing pull, but may consciously react to check it, and such reactions will tend to raise the rate of interest when the pull is towards higher prices, and lower it when the pull is downward. In sum, then, we conceive of movements of the general level of prices, arising out of the market environment, which tend to move the supply of money with them; but this supply has inertia and sets up a drag, or corrective reactions, which show themselves in a progressively rising or falling rate of interest. The association between the movements of the terms of lending and the rate of return on capital would thus be explained by the influence on each, through different channels, of the trend of the product price level.

10.0. The tendency of the market environment, indeed, could be the *primum mobile* from which all our observed movements separately depend. When that tendency is upward, for instance, firms can maintain or widen their profit margins, and the rate of return on industrial capital rises; because profits are now becoming a larger share of national income, and at all times a higher proportion of profits than of other incomes is saved, the proportion of national income saved rises; because of the pressure of the rising flow of money payments on the supply of money, the terms of lending also rise. This explanation has the attraction of unity, and is consistent with, though of course not uniquely required by, the observed behaviour of the economy.

11.0. It remains to emphasise the importance of the changes between 1913 and 1924. They confront us with a geological fault in the economy. There was an unusually big distributive shift: rents and profits were squeezed, earned income rose from about 55 to over 65% of home-produced national income. With this went a fall in the rate of return on investment in buildings and industrial capital: we are not sure how the total of equipment

stood in 1924, compared with 1913, but unless the physical total had fallen absolutely, the rate of return on it must have fallen, and on the most probable estimate the average rate of return, which had lain between 10 and 13% from 1870 to 1914, lay around 7% in 1924–26, and was still under 9% when at its highest in 1937–38. As a source of savings, profits were not only relatively reduced, but subjected to much higher taxation, which also diminished the effective yield offered to induce abstention from consumption. Total accumulation, at home and overseas, fell sharply as a proportion of national income, from over 14% just before the war to less than 8% through most of the inter-war years. Despite a severe reduction in accumulation overseas, which indeed after 1930 became negative, the rate of accumulation at home was lower than before; between 1870 and 1913 the physical quantity of capital other than buildings per occupied person almost doubled, and its growth had never been interrupted for more than two years at a time, but from 1924 to 1938 it did not on balance rise at all; and though house-building was more active, only after 1932 did aggregate accumulation at home go on at its pre-war pace.

An explanation of the distributive shift has been attempted elsewhere.[1] In para. 8.3 above we have suggested its effect on the sources and total of accumulation. The outcome, in the virtual failure to make any increase for fourteen years in industrial equipment per head of the occupied population, was very serious: the more so because it occurred even after the virtual abandonment of foreign investment, itself necessary for the development of supplies of food and raw materials for an island conurbation. It may have escaped adequate notice at the time, partly because of the extent of current investment in building, as also in roads, which are not included in our figures of capital, and these do indeed provide some offset; but also because this proved to be a time of technical harvesting, when the wider application of new techniques raised productivity at home substantially despite the scantiness of industrial investment in the aggregate, and when the terms of trade moved in our favour.

12.0. Summary

(i) The growth of the stock of capital in the United Kingdom between 1870 and 1938 has been estimated by two independent methods, the limitations of which are noted (paras. 1–3).

[1] Para. 18 of Phelps Brown and Hart, "The Share of Wages in National Income," Economic Journal, LXII, June 1952, p. 246.

(ii) The estimates show three relations with some stability: (*a*) capital has grown at about the same rate as income; (*b*) over each span 1870–1913 and 1924–38 earnings remained much the same proportion of national income; (*c*) in each span the rate of return on capital was stable (para. 4).

(iii) Any two of these relations together imply the third. The stability of the division of the national income between work and property appears as the joint outcome of (ii(*a*)), *i.e.*, the neutrality of invention, and a stable propensity of entrepreneurial behaviour (para. 5).

(iv) (*ii*(*a*)) is qualified by a failure of real income a head to rise despite a continued rise in real capital a head between 1895 and 1913, and a rise in real income a head much greater than that in real capital a head between 1924 and 1938. Possible reasons for this are suggested (para. 6).

(v) (ii(*c*)) is qualified when buildings and other real capital are considered separately: they show different, and greater, movements in the rate of return (para. 7).

(vi) An index of the terms of industrial borrowing shows both agreement with the rate of return on industrial capital and some divergence; what connection there was, was sharply displaced in the 1890s. There is a positive association between the movements of the terms of industrial borrowing and the proportion of national income saved (paras. 8.0–8.2).

(vii) The above observations are consistent with a supply-and-demand analysis for loanable funds, but would also have come about if fairly constant proportions both of earned incomes and profits were saved irrespective of the price offered for savings, and the proportion of profits saved were the larger. Some evidence indicative of this is cited (paras. 8.3, 8.4).

(viii) The suggestion in (vii) accounts for all the associated movements observed except that of the terms of lending. The "Gibson paradox" suggests how these terms may be affected by the predominant tendency of the market environment, which indeed could be the *primum mobile* on which the movements previously noted also depended (paras. 9, 10).

(ix) The extent and importance of the distributive shift between 1913 and 1924, and the associated change in accumulation, are emphasised (para. 11).

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APPENDIX

Statistical Methods and Sources

1. The estimates of capital accumulation and stock for 1870–1913 are those given in Appendix C of Phelps Brown and Handfield-Jones, "The Climacteric of the 1890's," *Oxford Economic Papers*, October 1952. For 1924–38 we have used the same methods, viz.: (i) we made an estimate of the capital stock in a base year, and cumulated on this our own estimates of annual net investment, in £s of constant purchasing power over capital goods; (ii) we took the flows of property incomes reported in the income-tax returns, reduced them to real terms by applying a general price index, and capitalised each throughout at the number of years' purchase used in a base year.

2. *First Method.* (a) *Capital Stock in Base Year.* Sir Josiah Stamp, *The National Capital* (1937), made estimates from the tax assessments of 1927/28 and 1934/35. But the results are not comparable, at least as measures of physical stock valued at current replacement cost, with those he obtained from the assessments of 1913/14. His capitalisation of the Schedule A assessments shows houses as making up less than 31% of the total value of the capital within our scope, as compared with 41% in 1912. The new methods of capitalisation which he applied to Schedule D incomes yielded current values which, given the change in replacement costs, imply a rise in real equipment per head of 8 or 9% since 1913, which is very different from the negligible change, over the same span, in real home-produced income a head, and does not agree with what we know of the intervening years. But if we continue to apply the methods of capitalisation he used for 1914, we get a substantial reduction in equipment a head, which goes too far the other way, and takes no account of the known decline of the level of profits. We have therefore made our own estimates (figures in 1912/13 £s):

(i) *Buildings.* We assume that the aggregate replacement cost of the stock of buildings in 1924 was that of 1912 (less Southern Ireland) raised in proportion to the increase in the total number of houses and the rise in building costs. £Mn. 3,519.

(ii) *All Capital other than Buildings.* We assume real equipment per occupied person the same in 1924 as in 1912: £Mn. 4,910.

(iii) *Total.* £Mn. 8,429.

3. *First Method.* (b) *Annual Net Investment, 1924–38.* (i) We made the following estimates by detailed inspection of the Censuses of Production:

	1924.		1930.		1935.	
	Gross.	Net.	Gross.	Net.	Gross.	Net.
Building and contracting	283·9	173·9	336·3	216·3	375·1	240·1
Less non-revenue yielding construction	80·4	44·0	107·2	61·5	101·6	58·2
Revenue-yielding building	203·5	129·9	229·1	154·8	273·5	181·9
Mechanical engineering	96·7	64·4	102·3	78·1	119·8	96·4
Electrical engineering	47·8	38·4	62·6	50·3	66·1	53·1
Shipbuilding	48·7	31·3	38·5	23·3	23·8	11·8
Commercial vehicles	10·0	6·2	15·8	9·9	15·7	10·3
Railways	82·0	24·9	67·7	16·6	60·0	15·7
	488·7	295·1	516·0	333·0	558·9	369·2

(ii) In each of the above six categories, we interpolated annual values, by use of an index of activity formed as follows:

(*a*) *Building.* Number of insured persons in employment in building and contracting (excluding public contracting), multiplied by *The Economist* index of building costs.

(*b*) *Mechanical Engineering.* Number of insured persons in employment in general engineering multiplied by wage-rate of engineering fitters (Bowley, *London and Cambridge Economic Service, Special Memo. No. 50,* May 1947).

(*c*) *Electrical Engineering.* Number of insured persons in employment in electrical engineering multiplied by same wage-rate as in (*b*).

(*d*) *Shipbuilding.* Net tonnage built in United Kingdom minus tonnage exported, multiplied by wage-rate for shipbuilding in Bowley (*op. cit.* in (*b*)).

(*e*) *Commercial Vehicles.* Number of commercial vehicles produced multiplied by retail-price index of commercial vehicles (*Motor Industry of Great Britain, 1939,* pp. 45, 47).

(*f*) *Railways.* Number of insured persons in employment as shop and artisan staff of railways (*Annual Railway Staff Returns,* Ministry of Transport) and in railway wagon and carriage building, multiplied by same wage-rate as in (*b*).

These indexes were used to predict net outputs for 1930 from the base of 1924, and for 1935 from the base of 1930; each difference between the predicted and actual outputs was then removed by a linear-trend correction over the span. For 1936–38 we extrapolated the trend corrections for 1930–35.

(iii) The above procedure yielded estimates of total annual new construction, which contains both net investment and replacement of scrapped equipment. The main evidence for replacement is in the Schedule D allowances for wear and tear. These show the amount of depreciation reckoned to be going on (Stamp, *British Incomes and Property,* pp. 178–80) rather than the amount of actual replacement, which is likely to vary in sympathy with new construction. This makes a case for taking a representative trend of depreciation, and modulating it proportionally to new construction. In the estimate for 1870–1913 (para. 1 above), the trend taken was that of national income, but in 1924–38 the Schedule D returns show a great rise in depreciation allowances, which, even after adjustment for the 10% rises in rates in 1931 and 1937, still more than double over a span in which national income, in current £s, ends much where it began. Even in the early 1920s, moreover, the Schedule D allowances bear a higher ratio to new construction than they did in 1907, and we seem to be confronted with a marked shortening of the average working life of industrial equipment. We have therefore taken as the trend of depreciation the trend of Schedule D allowances, after adjustment for administrative changes, and modulated this proportionally to the variation of new construction about its own trend for the period. To this we have added annual estimates of depreciation of buildings (so far as not covered by repairs), taken very roughly at 0·25% of total value; and of depreciation of Post Office telephones and telegraphs; together with a constant £Mn. 5 for other equipment not covered by Schedule D.

(iv) Net investment in stocks, in current £s, is estimated as in 1870–1913 (para. 1 above) at 40% of the first difference of national income in current £s.

(v) Net investment = new construction (ii) − replacement (iii) + addition to stocks (iv).

(vi) These workings give for 1938 an estimated net investment of £Mn. 276, which compares with an estimate of £Mn. 285 derived as follows from the White Paper on National Income (Cmd. 8203 of 1951).

(*a*) Gross domestic capital formation, £Mn. 845 (Tables 29, 30). This includes " the value of the increase in the quantity of stocks and work in progress " (pp. 58 and 74–5); and " all expenditure on the maintenance and repair of buildings and works " (note to Table 30, p. 74); but excludes

all maintenance and repair of plant and vehicles normally charged against current activity.

(*b*) Depreciation £Mn. 457 (Table 6, 16 (*b*)). This includes the repair of buildings included in (*a*) (p. 54) and also all replacement.

(*c*) Total net investment, (*a*) — (*b*), £Mn. 388.

(*d*) We have to deduct from (*c*) net investment in equipment not included in our scope, viz., in non-revenue-earning equipment, and in farmers' capital. From the Census of Production the former may be put at £Mn. 58 in 1935; if it grew proportionally to local authorities' capital outlay on this type of asset (Bretherton, Burchardt and Rutherford, *Public Investment and the Trade Cycle*, Table 30, p. 421) it may be put, with some allowance for depreciation, at about £Mn. 95 in 1938. Farmers' capital is put by Stamp at £Mn. 475 in 1935 (*The National Capital*, p. 18): a 2% increase would be about £Mn. 10. In all, say £Mn. 105, which deducted from (*c*) leaves around £Mn. 285.

The closeness of agreement with our own result is probably fortuitous, and may conceal differences in the components; but the order of magnitude is confirmed.

4. *Price Indexes.* (a) *Building Costs.* G. T. Jones's index of the selling price of building in London (*Increasing Returns*, pp. 268–9) through 1922; continued with such component series as are available through 1924; spliced in 1924 with *The Economist* index of building costs. As a check for the years 1914, 1924, we constructed another index independently from: (1) prices of certain building materials (*4th Interim Report of Inter-departmental Committee Appointed to Survey the Prices of Building Materials*, Cmd. 2153 of 1924), weighted according to the relative amounts required for the non-parlour house (Tudor Walters Committee, 1918: see H. Barnes, *Housing*, p. 293); (2) mean of wage-rates of bricklayers and their labourers (Bowley, *London and Cambridge Economic Service, Special Memo. No. 50*). We combined (1) and (2) with equal weights, and found an index (1914 = 100) of 192 for 1924, the same as that given by the original index.

(b) *Capital Goods other than Buildings.* (1) Through 1924, average values of iron and steel exports (Burnham and Hoskins, *Iron and Steel in Great Britain, 1870–1930*, p. 279); spliced in 1924 with average values of United Kingdom exports of machinery (Board of Trade). (2) Sauerbeck's index of raw material prices (Layton and Crowther, *Introduction to the Study of Prices*, p. 238). (3) Through 1924, index of prices of finished export goods (W. Schlote, *Entwicklung und Strukturwandlungen des englischen Aussenhandels von 1700 bis zur Gegenwart*, p. 180, col. 7); spliced in 1924 with average value of United Kingdom export goods (Board of Trade). Weights: 1912–24, (1) 1, (2) and (3) 3 each; 1924–38, (1), 36; (2) and (3), 32 each.

(c) *General Product Price Index.* (1) Wage-earners' cost of living (Bowley, *Wages and Income in the U.K.*, Table xvii, pp. 121–2); spliced in 1914 with Ministry of Labour index. (2) Money wage-rates (Phelps Brown and Hopkins, *Oxford Economic Papers*, II, 2, June 1950). (3) Prices of capital goods: (*a*) and (*b*) above combined with weights, 1912–24, 3, 7; 1924–38, 53, 47. (4) Mean of Sauerbeck's index of wholesale prices and Schlote's index of prices of finished export goods (sources as for (*b*.2) and (*b*.3). Weights: 1912–24, (1) 60, (2) 10, (3) 10, (4) 20; 1924–38, (1) 50, (2) 10, (3) 15, (4) 25.

5. *First Method: Cumulation.* We applied the indexes of (1) building costs and (2) the prices of other capital goods (4(*a*) and (*b*) above) to our estimated net investment in (1) building and (2) all other forms of accumulation, to get annual net investment, in £s of 1912/13 purchasing power, and we then cumulated these series on the stocks at the end of 1924 to get estimates of the stock at the end of each year 1924–38, in 1912/13 £s throughout. We divided these by the number of occupied persons from Table II, p. 56, of Bowley's *Studies in the National Income, 1924–38*.

Second Method: Capitalisation of Income Flows. In the two sectors, buildings and other capital, we took the corresponding annual flows of rents and of Schedule D incomes, so as to calculate the number of years' purchase implied in each

sector. As the base date at which to make this comparison we took December 1925, as a change in the method of assessment leaves us without assessments strictly applicable to 1924. We then applied these numbers of years' purchase to the assessed incomes of other years. The Schedule A assessments were adjusted by us over the intervals between reassessment years. We deflated all income flows by the general product price index. The estimates obtained from the second method rise above those from the first after 1926 and are much more affected by the slump of 1931, but there is fair agreement in the extent of movement from end to end. See Table III, series 13, 14.

TABLE II

U.K: 1870–1914

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1870	100	106	1,588	1,556	63	10·5	16·7	34·2	4·0	25	—	102	180
1871	100	108	1,614	1,609	65	11·0	17·6	35·4	4·0	57	14·5	100	170
1872	100	122	1,639	1,663	62	10·0	15·7	33·7	3·8	71	16·6	100	145
1873	106	125	1,667	1,730	63	10·6	16·8	34·9	3·8	60	16·3	100	155
1874	108	115	1,698	1,776	68	11·3	17·8	35·9	4·0	49	12·5	100	160
1875	104	106	1,738	1,802	74	10·4	16·0	33·3	4·3	26	8·9	98	147
1876	108	100	1,786	1,850	77	10·6	16·3	33·6	4·3	− 4	8·8	96	157
1877	107	96	1,842	1,903	82	10·5	16·0	33·6	4·4	−16	8·7	95	161
1878	107	90	1,889	1,942	89	10·7	16·2	33·7	4·7	− 3	7·7	96	168
1879	106	85	1,925	1,961	97	9·8	14·3	31·0	5·0	16	6·7	95	155
1880	107	90	1,964	2,009	95	10·2	15·3	33·3	4·8	6	8·6	93	147
1881	103	86	1,999	2,081	101	10·7	16·0	33·7	5·0	42	12·2	90	151
1882	101	87	2,034	2,159	105	10·6	15·6	32·6	5·1	33	11·5	90	151
1883	98	84	2,070	2,226	108	10·9	15·9	33·4	5·2	27	9·8	89	161
1884	98	81	2,102	2,247	115	10·4	14·7	31·8	5·5	55	8·4	90	150
1885	97	78	2,133	2,276	124	10·3	14·4	31·3	5·8	44	8·1	89	142
1886	94	74	2,166	2,318	128	10·6	14·9	32·2	5·9	75	10·7	88	142
1887	93	74	2,198	2,366	132	10·4	14·3	31·2	6·0	81	11·1	86	139
1888	92	76	2,231	2,450	132	11·0	15·5	32·6	5·9	90	13·3	84	148
1889	98	77	2,264	2,548	132	11·2	15·8	32·4	5·8	80	13·1	83	134
1890	94	81	2,296	2,632	133	11·4	16·1	33·0	5·8	95	12·8	84	139
1891	92	80	2,331	2,674	135	10·8	15·1	32·1	5·8	55	8·1	84	133
1892	92	77	2,362	2,716	139	10·3	14·1	31·1	5·9	40	6·8	83	124
1893	87	75	2,396	2,748	143	9·5	12·5	29·0	5·9	47	6·8	81	108
1894	87	71	2,433	2,835	154	10·7	14·3	30·2	6·3	23	8·0	80	113
1895	88	70	2,478	2,934	161	11·6	15·8	31·9	6·5	27	8·9	76	110
1896	88	70	2,533	3,018	162	11·1	15·0	31·1	6·4	48	9·7	73	88
1897	90	69	2,577	3,129	163	11·3	15·4	32·0	6·3	32	9·3	73	83
1898	90	70	2,638	3,273	165	11·5	15·6	32·8	6·2	18	10·6	75	87
1899	93	77	2,711	3,416	168	11·7	16·0	33·5	6·2	32	12·2	78	87
1900	97	88	2,775	3,562	161	11·2	15·3	33·8	5·8	31	12·4	81	91
1901	100	83	2,834	3,654	170	10·6	14·1	32·4	6·0	14	8·5	84	86
1902	100	80	2,884	3,768	175	10·7	14·2	33·0	6·1	10	8·7	84	88
1903	100	82	2,939	3,858	177	9·7	12·5	31·4	6·0	23	8·6	86	81
1904	103	83	2,998	3,963	182	10·2	13·3	33·1	6·1	27	9·9	89	90
1905	103	84	3,066	4,092	184	10·4	13·7	34·6	6·0	66	13·1	87	89
1906	102	90	3,118	4,234	182	11·0	14·7	36·5	5·8	108	14·5	89	97
1907	103	94	3,160	4,346	182	10·9	14·7	36·7	5·8	139	14·0	92	101
1908	106	88	3,207	4,358	191	10·0	13·0	34·8	6·0	135	9·7	90	93
1909	103	87	3,249	4,450	193	10·2	13·3	35·7	5·9	113	11·6	92	96
1910	97	92	3,287	4,557	191	10·3	13·6	36·5	5·8	154	13·5	94	91
1911	97	94	3,311	4,662	191	10·5	13·9	37·1	5·8	193	14·3	95	90
1912	98	98	3,330	4,789	188	10·9	14·6	38·5	5·6	207	15·3	98	98
1913	102	102	—	—	186	—	—	39·5	—	212	16·1	102	102
1914	111	100	—	—	—	—	—	—	—	—	—	—	—

1. G. T. Jones's index of cost of building, 1912/13 = 100.
2. Index of prices of capital goods other than buildings, 1912/13 = 100.
3. Estimated stock of revenue-yielding buildings, valued at replacement cost, reduced to 1912/13 £s. £Mn.
4. Estimated stock of capital goods (within given categories) other than buildings, valued at replacement cost, reduced to 1912/13 £s. £Mn.
5. Total rent of buildings in 1912/13 £s. £Mn.
6. Profits and rent of buildings in 1912/13 £s, as % of total stock of capital (within given categories) valued at replacement cost, reduced to 1912/13 £s.
7. Profits, in 1912/13 £s, as % of series 4.
8. Profits (including profits from overseas) as % of total net national income.
9. Rents of buildings, in 1912/13 £s, as % of series 3.
10. Net overseas investment, estimates in current £s by A. K. Cairncross, given by J. H. Lenfant in "Great Britain's Capital Formation 1865–1914," *Economica*, May 1951, p. 160; here reduced to 1912/13 £s. £Mn.
11. Total net investment (home and overseas) in current £s, as % of net national income in current £s.
12. Index of yield of fixed interest securities, 1912/13 = 100.
13. Index of estimated yield of industrial equities, 1912/13 = 100.

TABLE III

U.K.: 1924–38

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1924	184	197	212	181	130	165	53	+ 30	59	37	7·4	2,040
1925	180	191	205	176	138	162	58	+ 24	53	24	6·5	2,056
1926	176	188	206	168	147	152	62	− 26	17	− 7	3·7	2,070
1927	169	185	203	164	160	176	70	+ 92	95	44	9·2	2,091
1928	168	181	199	161	157	181	69	+ 4	42	68	7·9	2,104
1929	165	177	193	159	160	184	72	+ 10	45	58	7·5	2,122
1930	158	173	193	151	155	178	69	− 88	−22	16	3·2	2,137
1931	147	168	190	142	150	155	67	−116	−56	−62	−1·5	2,162
1932	142	160	182	135	128	145	58	− 39	− 2	−32	1·4	2,179
1933	140	158	176	138	141	145	67	+ 64	67	—	5·6	2,181
1934	141	157	175	137	156	173	75	+ 61	73	− 4	5·8	2,182
1935	145	165	188	140	182	187	84	+ 91	90	19	7·7	2,208
1936	149	171	195	144	206	229	92	+112	111	−11	7·3	2,232
1937	159	183	207	157	225	267	96	+ 91	97	−28	6·5	2,242
1938	157	185	207	160	225	266	96	+ 22	49	−30	4·7	2,266

	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
1924	8,429	—	3,519	4,910	121	7·5	10·5	3·4	29·8	126	83	219
1925	8,541	8,541	3,577	4,964	129	7·9	11·0	3·6	31·0	128	77	212
1926	8,620	8,652	3,639	4,981	138	7·4	10·0	3·8	28·8	132	66	156
1927	8,785	9,174	3,709	5,076	149	8·5	11·8	4·0	30·5	130	68	298
1928	8,896	9,603	3,778	5,118	156	9·0	12·6	4·1	32·0	126	63	205
1929	9,013	9,640	3,850	5,163	164	8·7	12·1	4·2	30·6	132	61	211
1930	9,060	9,471	3,919	5,141	177	8·1	10·8	4·5	27·7	126	64	100
1931	9,072	9,274	3,986	5,086	197	7·3	9·1	4·9	23·2	128	65	48
1932	9,127	9,639	4,044	5,083	210	7·5	9·3	5·2	23·0	112	66	103
1933	9,262	10,265	4,111	5,151	219	8·1	10·3	5·3	24·3	101	59	210
1934	9,410	10,434	4,186	5,224	225	8·4	10·9	5·4	24·7	95	52	231
1935	9,584	10,696	4,270	5,314	224	8·9	11·8	5·3	26·5	93	52	284
1936	9,787	10,913	4,362	5,425	225	9·5	13·0	5·2	28·4	93	51	339
1937	9,980	10,818	4,458	5,522	216	9·5	13·3	4·8	29·8	99	59	351
1938	10,125	10,493	4,554	5,571	224	9·5	13·2	4·9	29·2	100	71	277

1. General product price index, 1912/13 = 100.
2. General index of price of capital goods, 1912/13 = 100.
3. Index of cost of building, 1912/13 = 100.
4. Index of prices of capital goods other than buildings, 1912/13 = 100.
5. New construction of revenue yielding properties by building and contracting, in current £s. £Mn.
6. New construction other than building and contracting, in current £s. £Mn.
7. Net investment in revenue yielding properties by building and contracting, in 1912/13 £s. £Mn.
8. Estimated net investment in stocks, in current £s. £Mn.
9. Net investment (including stocks) in capital goods other than buildings and contracting, in 1912/13 £s. £Mn.
10. Net overseas investment, estimates in current £s. by the Board of Trade, here reduced to 1912/13 £s. £Mn.
11. Total net investment (home and overseas) in current £s as % of net national income in current £s. £Mn.
12. Estimated number of occupied persons (from Bowley, *Studies in National Income*, p. 56). 0,000's.
13. Total capital stock (within given categories); estimated by cumulating annual investment, in 1912/13 £s. £Mn.
14. Total capital stock (within given categories), estimated by capitalising annual property incomes in 1912/13 £s. £Mn.
15. Estimated stock of revenue-yielding buildings, valued at replacement cost, reduced to 1912/13 £s. £Mn.
16. Estimated stock of capital goods (within given categories) other than buildings, valued at replacement cost, reduced to 1912/13 £s. £Mn.
17. Total rents of buildings in 1912/13 £s. £Mn.
18. Profits and rents of buildings in 1912/13 £s, as % of series 13.
19. Profits, in 1912/13 £s, as % of series 16.
20. Rents of buildings in 1912/13 £s, as % of series 15.
21. Profits (including profits from overseas) as % of total net national income.
22. Index of yield of fixed-interest securities, 1912/13 = 100.
23. Index of estimated yield of industrial equities, 1912/13 = 100.
24. Total net home investment (incl. stocks), in current £s. £Mn.

7. The main series relating to capital accumulation, the occupied population, the rate of interest and price indexes are set out in the Appendixes of Phelps Brown and Handfield-Jones, "The Climacteric of the 1890's," *Oxford Economic Papers*, October 1952, and in the present Tables II and III. Other sources are:

Fig. 2. B. *Home-produced real income per occupied person:* home-produced income in current £s from Phelps Brown and Hart, "The Share of Wages in

National Income," ECONOMIC JOURNAL, LXII, June 1952, p. 246; deflated by general product price index in present Tables II, III. C. *Real earnings per employee:* sum of Wages and Salaries in Phelps Brown and Hart, *op. cit.*, divided by total occupied population, so neglecting changes in proportion of that population who are employers and self-employed; deflated by product price index.

Fig. 4. B. *Home-produced real income (excluding rent of buildings) per occupied person:* deduction for rent from present Tables II, III; otherwise as under Fig. 2, B. C. *Output per operative in mining and manufacturing:* series 7 in Table II of Appendix B of Phelps Brown and Handfield-Jones, *op. cit.*

Fig. 6. A. *Index of yield of fixed-interest securities:* K. C. Smith and G. F. Horne, "An Index Number of Securities 1867–1914," *Royal Economic Society Memo No. 47*, June 1934, Table III; continued after 1933 from London and Cambridge Economic Series. C. *Index of yield of industrial equities:* index of industrials, same source as A above, divided into product of index of rate of return on industrial capital (present article, Table II, series 7, and Table III, series 19) and index of product prices (Phelps Brown and Handfield-Jones, *op. cit.*, and series 1 in present Table III).

Fig. 7. *Net Accumulation (Home and Overseas) as % of National Income:* national income from A. R. Prest, ECONOMIC JOURNAL, March 1948. *Profits (including profits from overseas) as % of national income:* home-produced profits from Phelps Brown and Hart, *op. cit.*, plus profits from overseas as in *ibid.*, Appendix A.

FOREIGN EXCHANGE RATES AND MONOPOLISTIC COMPETITION

"The role of monopolistic and imperfect competition in actual international trade is crucial and . . . needs extensive further examination."

P. A. Samuelson
(*The Economic Journal*, June 1952)

1. The Problem

In their brilliant pre-war essays, Mrs. Robinson [1] and Professor Machlup [2] have presented the theory of foreign exchanges. Both analyses were purely deductive, and both ran in terms of elasticities of supply of and demand for imports and exports. The same was true of a third outstanding contribution, A. J. Brown's article in *Oxford Economic Papers*,[3] whereas Hirschman [4] presented an analysis in terms of elasticities of demand for foreign exchange. A summary of post-war empirical estimates of the elasticities of supply of and demand for imports and exports is presented by A. J. Brown in his recent contribution to *Oxford Studies in the Price Mechanism*.[5]

As analytical tools, the demand curve assumes pure competition among buyers, and the supply curve assumes pure competition among sellers. Markets for manufactured consumers' goods may satisfy the former condition, but they almost never satisfy the latter. The supply curve clearly must be discarded. But the existence of a unique demand curve faced by the firm also assumes that the product is set and that selling effort is either non-existent or constant. Such is clearly not the case of British export of men's clothing, automobiles, whisky and other consumers' goods. How can the theory of foreign exchanges be modified accordingly?

[1] Joan Robinson, "The Foreign Exchanges," *Essays in the Theory of Employment*, 2nd ed. (Oxford: Basil Blackwell, 1947), reprinted in *Readings in the Theory of International Trade* (Philadelphia: The Blakiston Company, 1949), pp. 83–103.

[2] Fritz Machlup, "The Theory of Foreign Exchanges," *Economica* (November 1939 and February 1940), also reprinted in the Blakiston *Readings*, pp. 104–58.

[3] A. J. Brown, "Trade Balances and Exchange Stability," *Oxford Economic Papers* (April 1942), pp. 57–75, reprinted in *Oxford Studies in the Price Mechanism* (Oxford: At the Clarendon Press, 1951), pp. 75–90.

[4] Albert O. Hirschman, "Devaluation and the Trade Balance: A Note," *The Review of Economics and Statistics* (February 1949), pp. 50–3.

[5] A. J. Brown, "The Fundamental Elasticities in International Trade," *Oxford Studies in the Price Mechanism*, pp. 91–106.

2. British Exports

First, let us examine *price* competition. Let a British product be sold in a United States market for differentiated products. But let product differentiation be given once and for all. In other words, for the moment products and selling effort are not assumed to be variables in our problem. Only price adjustment is considered. In the United States market there exists a firm demand curve, faced by the British firm, for the British product. The curve is determined by tastes and desires, national income

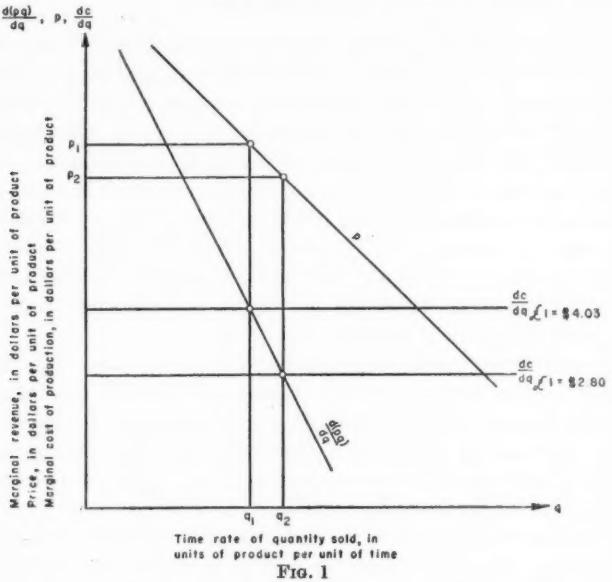
Marginal revenue, in dollars per unit of product
Price, in dollars per unit of product
Marginal cost of production, in dollars per unit of product
p1
p2
p
dc/dq £1 = $4.03
dc/dq £1 = $2.80
d(pq)/dq
q1
q2
q
Time rate of quantity sold, in units of product per unit of time

FIG. 1

and competition *in the United States market*. The demand curve is a price–quantity relationship, and if price is expressed in dollars per unit of product the demand curve is, to all intents and purposes, unaffected by the dollar–pound exchange rate. Let the demand curve be p in Fig. 1. According to established theory, price is determined by demand and cost. There also exists a British marginal-cost curve of the British product. Assume that no non-British factor inputs are required. The British marginal-cost curve is then determined solely by *British* factor prices and *British* input–output relationships. Assume that both determinants are unaffected by the exchange rate. The British marginal-cost curve, expressed in pounds per additional unit of product, can then be translated into a dollar curve by multiplying

all the ordinates of the curve by the exchange rate. In Fig. 1 the same British marginal-cost curve has been translated into two different dollar curves, one based on the exchange rate £1 = \$4.03, the other based on £1 = \$2.80. The curves are labelled dc/dq with the exchange rates as subscripts.

From Fig. 1 it is readily apparent that devaluation of the pound from \$4.03 to \$2.80 will reduce the optimum American price of the British product and expand American sales. Gross dollar revenue will increase for the following reason. The theoretical

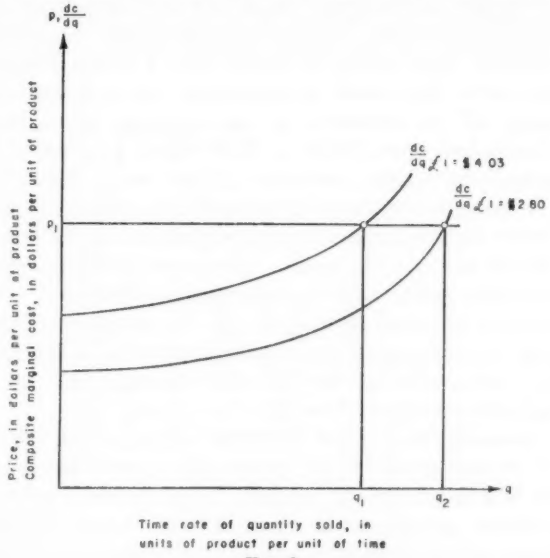
p, dc/dq
dc/dq £1 = $4.03
dc/dq £1 = $2.80
p1
Price, in dollars per unit of product
Composite marginal cost, in dollars per unit of product
q1
q2
q
Time rate of quantity sold, in units of product per unit of time

FIG. 2

optimum output is the output at which marginal cost and marginal revenue are equal. Since marginal cost is always positive, marginal revenue is also positive. Therefore, if marginal cost—still positive—is reduced gross revenue increases. This, of course, is only an alternative way of saying that the elasticity of demand in the optimum point is always numerically larger than unity.

Second, let us examine *non-price* competition. Let price be fixed at p_1. Product and selling effort are now regarded as variables. At a fixed price there exists in this case what the present writer has called the *composite* marginal-cost curve.[1] In Fig. 2, that curve is dc/dq at price p_1. The composite marginal-

[1] Hans Brems, *Product Equilibrium under Monopolistic Competition* (Cambridge, Mass.: Harvard University Press, 1951), Chapter 5, particularly pp. 76–87.

cost curve is a generalisation of Professor Chamberlin's marginal cost curve MM' in his Fig. 22 in *Monopolistic Competition*, p. 142. The difference is that Chamberlin's curve is a combined curve of marginal costs of production and marginal selling outlay in case the product is set, whereas our composite marginal-cost curve also includes the marginal costs of *varying the product*.

(*a*) If we could disregard selling costs completely we would once again assume that no non-British factor inputs are required. Thus varying the product could be done by British designers and British suppliers of materials, and routine production of the new product could, perhaps, be assumed to require no non-British factor inputs. Once again we would have a purely British marginal-cost curve that could be translated into a dollar curve by multiplying all the ordinates by the exchange rate. Reducing the exchange rate from \$4.03 to \$2.80 would thus reduce in the same proportion all the ordinates of the composite dollar-cost curve. Consequently, the point of intersection between the composite curve on the one hand and the horizontal price line on the other, would move to the right. This point indicates maximum profits or, more specifically, the " product equilibrium." Thus in Fig. 2 volume increases from q_1 to q_2. Dollar revenue earned by the British in this case is price times number of units sold, and therefore dollar revenue will increase from p_1q_1 to p_1q_2 if the exchange rate is reduced from \$4.03 to \$2.80.

(*b*) However, we cannot disregard selling costs. From the point of view of international trade, selling costs are peculiar in that the selling job has to be done in the export market itself. Selling British products in the United States means buying space in United States newspapers and magazines, buying time in United States networks, employing United States residents as salesmen. Thus selling the product does require the input of non-British factors. In this case, what happens to dollar revenue earned by the British? For one thing, it should be remembered that sales can be made either by varying the product or by impressing the buyer's mind. Product variation and selling effort, in other words, are substitutes. The reduced exchange rate will encourage substitution of product variation for selling effort, for in terms of dollars the reduced exchange rate reduces the cost of varying the product, whereas the cost of impressing the buyer by means of selling effort is unaffected. Our result is that at any given price and volume, total selling cost is down. However, volume is up from q_1 to q_2. But marginal selling cost must always be less than price, for the latter also includes marginal profits and

labor and material costs of production. For both these reasons, then, the difference between price times volume, on the one hand, and total selling cost, on the other, is larger than before. But that difference is precisely the dollar revenue earned by the British.

3. British Imports

Essentially the same technique of analysis can be applied to British imports. Fig. 3 shows *price* competition. Taking product and selling effort as constants, there exists in the British market a demand curve for the imported, U.S.-produced, commodity. The British demand curve can be translated into a

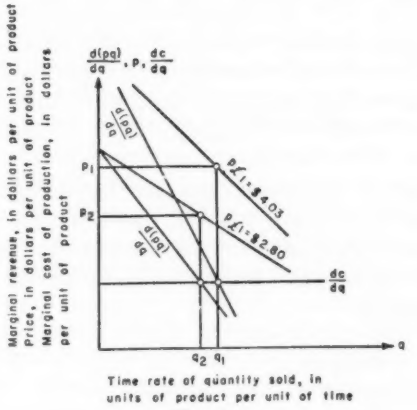

FIG. 3

dollar curve by multiplying all the ordinates of the curve by the exchange rate. Two positions of the curve are shown in Fig. 3. There also exists a dollar marginal-cost curve of the imported commodity. Since this curve is determined by United States factor prices and United States input–output relationships it is unaffected by the exchange rate. From Fig. 3 it is seen that a devaluation of the pound will reduce British gross dollar expenditure, for the rectangle representing that expenditure has its height as well as its base reduced, $p_2q_2 < p_1q_1$.

Fig. 4 shows *non-price* competition. In this case the British price in terms of pounds is assumed to stay unchanged. In terms of dollars, therefore, the British price is reduced by devaluation. United States dollar costs of production are unaffected by devaluation, but British selling costs are reduced in terms of dollars. The composite dollar marginal-cost curve is thus reduced *less* than

the dollar-price line, and their intersection point consequently moves left. In Fig. 4, volume is reduced from q_1 to q_2. What is the effect upon British dollar expenditure? The reduced exchange rate will encourage some substitution of selling effort for

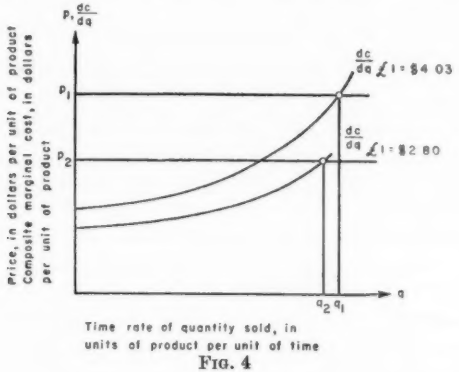
p, dc/dq
dc/dq £1 = $4 03
p1
dc/dq £1 = $2 80
p2
Price, in dollars per unit of product
Composite marginal cost, in dollars per unit of product
q2 q1
q
Time rate of quantity sold, in units of product per unit of time

FIG. 4

product variation; add to this the fact that marginal selling cost is always less than price, and the result is that the difference between price times volume on the one hand and selling cost, on the other, is smaller than before. This difference is the British dollar expenditure.

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COMMENT

1. The foregoing article is an elegant and, within the limits of its assumptions, unexceptionable piece of analysis. By relating the theory of imperfect competition to foreign-exchange-rate changes Professor Brems touches on a matter of topical and very serious practical importance. I wish to put forward the view that the assumptions are inappropriate and already somewhat *démodé* as normal tools for the analysis of imperfect competition, that, if these are modified, his main conclusions cannot be upheld, and that, in the circumstances of to-day, they could well be used as arguments in favour of dangerous courses.

2. I will confine myself to the first passage of the second section. Similar arguments lie, *mutatis mutandis*, against the remaining passages of the note.

3. The key points in Professor Brems' argument are: (i) that the demand curve "is determined by tastes and desires, national income and competition *in the United States market*" . . . and "to all intents and purposes unaffected by the dollar–pound exchange rate," and (ii) that, if there is equilibrium prior to the exchange-rate change, the elasticity of demand is numerically larger than unity. It follows that after the exchange-rate change, the demand curve, expressed in dollars, will be unchanged, the marginal cost of the representative British exporter, expressed in dollars, will be reduced and, the elasticity of demand being greater than one, the British exporter will have the opportunity, which he would doubtless take, of profitably increasing his gross dollar receipts.

4. From the early days of the theory of imperfect competition it was recognised that the complete independence of the demand curve confronting the particular producer and its derived marginal revenue curve could not be upheld if the situation was notably oligopolistic. If each supplier was sufficiently important for other suppliers to take note of any change in his price policy and react to it, the analysis had to become a little more complicated. More recently it has been recognised that similar considerations apply if the supplier is too small to have notice taken of him. Each supplier in imperfect competition, however small, has constantly to consider whether the price he is charging is vulnerable and likely to cause an erosion of his own market over a longish period. He will normally tend to temper his price policy by having regard to its likely long-run effects in securing his own market against potential competitors.

5. If this doctrine is applied to the case before us, Professor Brems' first point, as stated in paragraph 3 above, ceases to be valid. The elasticity of the demand curve in the United States for the product of a particular British producer can no longer be regarded as dependent on United States conditions alone, but also depends on the competitive potential of the British producer's British rivals. It follows that the demand in the United States market for the product of a particular British firm is *not* independent of the dollar–pound exchange rate. It also follows that, if the pound is devalued, the United States demand curve confronting the individual British producer simultaneously drops, since the drop in the exchange rate puts his rivals in a position to offer lower quotations. (It should be noted that if other countries join in the devaluation the British producer will have to think of the competitive potential of rivals in those countries also.)

6. Professor Brems' other point also becomes invalid. While it is doubtless true that in equilibrium the United States demand curve confronting each separate British producer must have elasticity greater than one, it does not follow that the United States demand curve confronting the British producers of a given article *considered as a group* has elasticity greater than one. The words " competition in the United States market " in the passage quoted above are ambiguous, since it is not clear if competition is intended to refer to American competition only, or also competition by third country, *e.g.*, German, producers. If we ignore third countries, it is quite possible for the elasticity of demand for the product of the British producers as a group to have less than unitary elasticity; in such conditions, owing to the drop in the demand curve caused by the change in the exchange rate, each producer might correctly judge that he had to lower the dollar price merely to maintain previous sales, and total dollar proceeds accruing from the sale of the article in the United States would accordingly fall. It might well happen that the demand for the product of the British producers as a group was rendered elastic only by the presence of third-country competition. If that were so, the drop in the exchange rate would be expected to increase dollar earnings, *provided that the third countries did not also devalue, but not otherwise.* But it cannot be asserted *a priori* that the United States demand for the product of the British producers as a group is elastic, even taking into account third-country competition. If it were inelastic British dollar proceeds would fall even if the third countries did not also devalue.

7. It is not to be inferred from the foregoing arguments that a devaluation would be likely to make the dollar proceeds of British exports fall, but only that an *a priori* presumption that they would rise cannot be established by Professor Brems' reasoning.

8. Some time after the devaluation of 1949 I had occasion to discuss with a group of British producers the point that some British exports, particularly from heavy industry, were being under-priced in sterling in relation to what foreign markets would bear, to the detriment of the British external balance of payments. I was met with the reply that it was the habit of the firms in question to charge honest prices, viz., prices related in some way to sterling costs of production, that it was not their practice or part of their expertise to soak their markets and that they were convinced that a conservative pricing policy would be of greater benefit in the long run. To this I replied by suggesting

that an exception to their normal procedures might be made in the special circumstances of the period after devaluation, since Britain had been going through an exchange crisis, and it was in the minds of those who judged devaluation a suitable remedy that it would give an opportunity for Britain to enlarge her foreign-exchange receipts. This opportunity would be in large part missed if those producers, who could maximise gross receipts in the new situation by marking up sterling prices, failed to do so. The group in question acknowledged that there was force in this, but adduced an objection which they claimed to be insuperable. If they were to pursue such a policy with success, they would have to discuss matters with *their British competitors*, and that they were altogether unwilling to do.

9. It need not and should not be inferred that all British producers were in the circumstances or frame of mind outlined in the foregoing paragraph. Some may have been in a near-monopolistic position, others may have been willing to concert plans with competitors and others again may have been able to find a way amid the thickets of competition to frame a price policy which gained them increased dollar proceeds. But if a substantial number were in the situation described above, that would be sufficient to invalidate the *a priori* presumption of a probable net gain of dollar proceeds for Britain.

10. In 1948 the dollar value of the exports of British finished manufactures to the United States was $165 million; in 1950 it was $173 million.[1] This increase was less than the rise in United States national income, expressed in dollars, which was 10% in that period. At the same time the *volume* of British exports of finished manufactures to the United States rose 30%. While no hard-and-fast inference can be made from these figures, they do not suggest a price elasticity of demand above one. At the same time the dollar value of British exports to the Latin American area, where United States competition is strong, fell, although their volume rose.

11. Americans sometimes show mental resistance to accepting the view that internal competition in Britain might have been an obstacle to British producers choosing freely the sterling prices that would have maximised dollar proceeds, to choosing freely, that is, whether to retain the pre-devaluation sterling prices or to mark them up by part or all of the full amount of devaluation. There is an old doctrine that competition tends to adjust prices

[1] Federal Reserve Bank of New York, *Pattern of U.S. Import Trade since 1923* (1952).

to production costs; this appears to have been lost sight of in devaluation discussions in certain quarters. This may (or may not) be due to a tendency by Americans to assume that competition in Britain is moribund. I sometimes ask my American friends whether they wish the British to establish cartels—*real* price-fixing cartels—throughout British industry, so that in the event of their wishing another devaluation on us, we might be sure of making it a resounding success.

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DEVELOPMENT CHARGES AND THE COMPENSATION–BETTERMENT PROBLEM

THE Town and Country Planning Act of 1947 has recently been amended. The changes, which were confined to the financial provisions of the Act, included the abolition of development charges and thus ended an ingenious attempt to deal with the compensation–betterment problem. The purpose of this paper is to explain what development charges were and why they had to be abandoned and to pose some questions concerning the alternative proposals which the Government has put forward.[1] First, however, a brief discussion of the nature of the problem is presented.

THE COMPENSATION–BETTERMENT PROBLEM

Any town and country planning activity, for example the zoning of a particular area as a green belt or the regulation of building heights, makes some people better off and others worse off in a variety of ways. Thus the construction of a new street improves traffic conditions but requires the acquisition and demolition of property along its route. Furthermore, neighbouring property which is not physically affected may appreciate or depreciate in value.[2] This and some of the other effects are, at least in principle, measurable in money terms.

The problem is: (a) *When is it both practicable and desirable to compensate those people made worse off and to levy some charge on those people made better off;* (b) *How shall this be done?*

Since the answer given will affect the cost of much planning activity and therefore exert an influence on the amount and type of planning that the planning authorities can afford to do, it is evident that the problem relates to the allocation of resources as well as to the distribution of income and wealth. Furthermore, because the financial position of planning authorities is another factor determining what they can afford, the problem of local government finance is interlinked with the compensation–betterment problem. Thus any thorough analysis of the latter

[1] In writing this paper I have been greatly helped by a number of people professionally concerned with the property market who were kind enough to grant me interviews.

[2] For instance the construction of Charing Cross Road destroyed the trade of a number of small shopkeepers near by.

problem must involve consideration of a very wide range of issues.

At least in recent years, more attention seems to have been directed to the distributional aspects than to the allocational aspect. But it has often been said that under the 1932 Town and Country Planning Act planning cost too much money, so that not enough was done. In particular, two arguments were put forward, the doctrines of shifting and floating value, to explain that compensation was in some respects too favourable to landowners as a whole. The Uthwatt Committee on Compensation and Betterment summarised them as follows in paragraph 28 of its final report : [1]

> " If land with potential development value is purchased by a public authority or is restricted against development or certain forms of development, compensation has to be paid for individual loss of land values which have not in fact been destroyed but which have only shifted to other land. In addition, where the land belongs to a number of owners, the aggregate of values claimable by individual owners when separately assessed, owing to the factor of " floating value," greatly exceeds the actual loss of the claimants taken as a group."

The principle of 100% shift in value was clearly stated in 1929 by Sir Raymond Unwin with reference to the preservation of open spaces in areas suitable for residential development. He contended :

> ". . . that where land is withdrawn from the area available for building, the value of the prospect of building increment on the remaining land is increased by the actual value of the prospect thus extinguished on the withdrawn land." [2]

In paragraph 26 of its final report the Uthwatt Committee stated more generally that :

> " The public control of the use of land . . . increases the value of some land and decreases the value of other land, but it does not destroy land values. Neither the total demand for development nor its average annual rate is materially affected, if at all, by planning ordinances."

It is not clear whether this last sentence is a historical statement about the nineteen thirties or a generalisation about all planning, past and future. In the latter sense the statement is

[1] Cmd. 6386. 1942.

[2] Memorandum on Open Spaces, p. 22 in the First Report of the Greater London Regional Planning Committee.

simply not true. Of course, the prohibition of development, which would not have taken place in any case, will hardly affect land values, but the prohibition of profitable intended development will often drive developers to inferior alternative sites for which they are not prepared to offer as high a price. In such cases the rise in the value of the inferior sites will generally be less than the fall in the value of the superior sites where development has been prohibited. If the prohibition of development on a good site causes the potential developer to give up altogether, as may sometimes happen, there will be no shift of value at all. Thus "There is no economic law of the conservation of value," [1] and the importance of shifting value has been exaggerated.

The development value of a piece of land is the amount it is expected to be worth if and when it is developed less the cost of development appropriately discounted for the futurity and uncertainty of the development, minus the present existing-use value of the land. It is not very clear whether the Uthwatt Committee defined floating value as simply development value, or whether they meant it to indicate that land changed hands at prices which showed an over-valuation of the possibility of development.

In the first sense, that of development value, floating value does exist, but why this should mean that compensation on a market-value basis is "excessive" was not explained by the Committee. In the second sense the existence of floating value is inconsistent with the 100% shifting of values which the Committee believed to happen.

This can be shown by a simple analytical example. Suppose an expanding town to be surrounded by four equal-sized areas of fringe land, all equally suitable for development and equally likely to be developed. Assume that the development of the foreseeable future will take up only one of these areas. Then if the existing-use value of the fringe land is £x per acre, and the excess over existing-use value which will be paid for the land on development actually taking place is £y per acre, the land will be worth £$x + \frac{1}{4}y$ per acre.[2] If it sells for more, say £$x + \frac{1}{3}y$ per acre, then (on this definition) floating value exists. Now suppose that development on three of the areas is prohibited; according to the

[1] This phrase is taken from an address by Sir Arnold Plant to the Chartered Auctioneers' and Estate Agents' Institute, printed in the May 1949 issue of their Journal. They quote Sir Arnold's statement with approval on page 7 of their Memorandum on the 1947 Act.

[2] Ignoring the discount to obtain present value.

doctrine of 100% shift, the remaining area will then have a market value of £$x + 4/3y$ per acre. Since the true development value is only £y, this is manifestly absurd, and so therefore must be at least one of the two doctrines which, when combined, produce such an answer.

As has just been argued, the doctrine that value will always shift 100% is incorrect. What about the doctrine of floating value in the sense now under consideration?

The idea that land which is capable of development normally sold at prices which reflected an over-estimation of the imminence and likelihood of that development implies that developers were consistently over-optimistic. The Uthwatt Committee provided no explanation in their Report of why this should be so, and since the minutes and memoranda of evidence are unfortunately not available, it is impossible to assess their conclusions on this matter. But it is interesting to note that the Land Agents' Society, in their observations (submitted to the Government) on the report of the Uthwatt Committee, stated (p. 5) that, "It is the experience of members of the Society . . . that purchasers are not so optimistic as the 'floating value' theory implies, and that when buying from a willing seller, they discount very fully the risks attaching to the time and place at which development will take place."

However, even if it is granted that the average developer was over-optimistic and thus prepared to pay as a maximum too high a price, it does not follow that he actually paid too high a price. For when there is competition in the supply of sites developers can obtain land for less than the maximum price they would be prepared to pay. In other words "the existence of several properties suitable for development or redevelopment of a particular type automatically depresses the price obtainable for each, below what any one property could command in the absence of competition." [1]

Finally, the factor of floating value may be understood in a third meaning which does make sense and is relevant to compensation problems. It may be that even though private developers did not pay "over-bid" prices, local authorities had to. Since the rules of the Acquisition of Land (Assessment of Compensation) Act of 1919 require open-market value to be the basis, the allegation that the compensation that had to be paid by local authorities was excessive must mean that where the compensation was judicially decided, the awards were too generous to the land-

[1] *R.I.C.S. Memorandum*, p. 11.

owners. Thus if the owner of land which was designated for compulsory acquisition put in a claim based on the assumption that his property would shortly have been developed, it was said to be extremely difficult for the acquiring authority to prove in the courts that development was actually not very probable. If this be true, the question arises whether a change in the rules for the assessment of compensation might not have been adequate to reduce, if not abolish, over-compensation.

The conclusion of this discussion is that the arguments relating to the cost of compensation for planning restrictions and compulsory acquisition need to be reconsidered. The importance of shifting value has been exaggerated, and the doctrine of floating value is unclear, unless it be understood in the third sense considered, in which case it may well be that the matter could be dealt with by some modification of the 1919 rules.

The 1947 Act

The basic principle of the financial provisions of the 1947 Act was very simple: nationalisation of the development value of land so that private owners were to keep only the value of their real property in its existing use. Private transactions in land were consequently supposed to take place at existing-use value. The following main financial provisions of the Act were obviously consistent with this basic principles:

(*a*) The price paid for land on compulsory purchase (by local authorities, statutory undertakers, etc.) was limited to its value in its existing use.

(*b*) No compensation was to be payable on the imposition of planning restrictions except when they diminished the value of land below its value in its existing use.

(*c*) When land use was changed, or land built on, a development charge could be levied equal to the consequential increase in the value of the property.

Furthermore, £300 million in Government stock (plus accrued interest in cash) was to be paid as compensation by July 1, 1953, to landowners who filed claims for loss of development rights in their property.

Development charges were paid not only by private developers but also by local authorities in respect of development on land acquired since July 1, 1948, which was the "appointed day" when the bulk of the Act came into force. But if we lump together the central government and the local authorities these

payments cancel out; the net financial result to them together as compared to the pre-war system was composed of the following main items:

They now paid hardly any compensation for planning restrictions.

They purchased land at its existing use value instead of at its free market value including development value.

They received development charges.[1]

They were to pay interest to landowners on £300 million (at a rate of interest not announced).

A justification of the nationalisation of the development value of land as being an improvement upon the financial provisions of the 1932 Town and Country Planning Act must therefore have rested on the following propositions:

(1) For any given amount of planning activity the net financial result just mentioned was favourable to local authorities and the government together (*i.e.*, it was unfavourable to property owners) and ought to have been so;

and/or

(2) Insofar as the amount of planning activity is influenced by financial considerations the new system was more likely to encourage the "right" amount of planning activity than the 1932 Act;

provided that

(3) The incidental effects of the system were not so undesirable as to offset these advantages.

Development charges have been abolished mainly because this last proviso was not fulfilled.

Development Charges

In order to examine the effects of Development Charges the system must now be briefly described. Development, upon which Development Charges were levied, is defined in the Act as "the carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any buildings or other land." Not all development was charged, however; apart from transitional

[1] At a rate of about £8 million a year in 1952. A considerable proportion were set off against claims on the £300 million in respect of single plots and builders' "near ripe" land, their owners being promised 100% compensation for loss of development value and allowed to offset charges against their claims.

provisions (and the provisions relating to statutory undertakers, local authorities, charities, etc.), the following main kinds of private development were free of charge :

Operations

Erection of plant and machinery within a building.
Repairs and maintenance.
Building and erecting for agriculture or forestry.
Erection of advertisements, fences, walls and gates.
Rebuilding, enlarging or improving a building if this did not increase its cubic content by more than 10% (or, in the case of dwelling-houses, by 7,500 cubic feet if this were greater) of its cubic content on July 1, 1948, or (if later) when first built.
Erection, alteration or extension of buildings on property certified by the Minister as dead ripe for the development in question.[1]

Change of Use

Increase in one use in a multi-use property by not more than 10%.
Display of advertisements, camping, temporary use.
Change of use to agriculture or forestry.
Change of use within certain specified "use classes," and certain changes from one use class to another.

Examples of chargeable changes of use were : light industrial building to general industrial building; shop to wholesale warehouse; house to hotel; boarding school to social centre. Examples of changes of use which were free of charge were : Shop to office; bone burning to blood boiling; nursing home to hospital; one general industrial use to another general industrial use or to a light industrial use.

This gives a broad idea of what was liable to charge (though it was possible for development which was liable to be assessed with a nil charge on valuation grounds). The principle of assessment must now be described. This was laid down by a Statutory Regulation [2] which required that :

> "Development charge shall not be more than the . . . additional value, measured by normal processes of valuation, of the land due to planning permission for a particular development" and not less than this unless it "ought

[1] 1948 No. 1189.

[2] No payment from the £300 million was to be made in respect of the value for this development.

> properly to be less in order to comply with the Governing Principle" that "land can be freely bought and sold . . . in the open market at a price neither greater nor less than its value for its existing use."

The Central Land Board, which, working with the valuers of the Inland Revenue, was responsible for assessing and collecting development charges, reformulated the first part of this by saying that development charge was to equal the difference between the Consent Value and the Refusal Value of the land, where :

> *Consent Value* was the value of the land on the assumption that its owner might carry out any development which was not liable to charge and the particular development for which he had planning permission, *i.e.*, it excluded all other development for which planning permission was required.
>
> *Refusal Value* was the value of the land on the assumption that its owner might carry out any development which was not liable to charge but that all other operations and uses were permanently prohibited. For present purposes this can also be called existing use value.[1]

Development charge was thus to be 100% of the increase in capital value due to planning permission to develop.

By the use of the words "normal processes of valuation" in the Regulation the Central Land Board was, in effect, left to decide how charges were assessed. As it said rather plaintively in its *Practice Notes*,[2] the application of the Regulations "depends almost entirely on the meaning to be given to the word 'value.' This word is not defined either by the Act or by the Regulations"!

The simplest case to consider is that where an owner-occupier contemplated development. If the assessment of refusal value equalled the capital loss he would suffer if his property without planning permission were confiscated without compensation, and the assessment of consent value equalled the capital loss he would suffer if his property with planning permission for the contemplated development were confiscated without compensation, then the development charge would have completely removed all his incentive to develop. (The capital loss is whichever is the less of (*a*) the present value to him of the net returns from the property, or (*b*) the cost of equivalent re-instatement. Where the returns from

[1] In some cases existing-use value as Refusal Value differs from existing-use value as the price paid on compulsory acquisition, but such differences are not important in the present context.

[2] Pp. 11. The *Practice Notes* were published by H.M.S.O. in 1949.

the property are non-pecuniary, as in the case of a dwelling-house, only (*b*) is relevant.) It follows that unless refusal value were greater or consent value less than the corresponding conceptual capital loss, development charges would have prevented development.

There are in fact a number of reasons why development charges were assessed at a lower level than that which would remove all incentive to develop in the manner just described.

(1) Value was taken as being the price land would fetch if offered for sale in the open market and not as including "the whole of the profit-earning capacity of the land in the hands of the owner." [1] Where there is competition in the sense that a number of properties suitable for a particular type of development are available it is often possible to buy any one of them at a price considerably less than its full profit-earning capacity for development. In such cases the principle just quoted gives a Constant Value lower than the capital value to the developer of the property with the right to develop.

Furthermore :

(2) Regard was had to developer's risk and profit. In the arithmetic which constituted or explained the assessment of Consent Value this was done in a number of alternative ways. Thus if similar adjacent land free of charge had sold at £*x* per acre and this figure was taken as the consent value, the charge allowed the developer roughly the same profit as the developers of this adjacent land expected to receive when they paid £*x* per acre. Alternatively, consent value might be estimated by subtracting the cost of development plus an allowance for risk and profit from the present value of the developed property. Or the rate of interest at which the expected returns were capitalised to obtain the present value might allow an adequate rate of return to the developer.

(3) "It is realised that values may at the present time be considerably affected by the possession or otherwise of a building licence. Consent Values will not be assessed at the higher figure which might result if the land were being sold with a licence attached to it in a market of potential developers who had no building licences, but could obtain one by buying the particular land with its planning permission. On the other hand, they will not be assessed at the depressed figure which might result if the land were being sold in a market composed solely of bidders unlikely to get a licence." [2] This means that where building

[1] *Practice Notes*, p. 11. [2] *Ibid.*, p. 19.

licences had a "scarcity value"[1] development charges did not make development unprofitable. Since the scarcity value of building licences was (and is) not confined to houses, where it is cheaper to build a new house than to buy an equivalent existing house with vacant possession, this factor was of considerable general importance. Even for types of property where there is no rent control, the market is not so perfect that space can always be obtained by would-be tenants prepared to pay for it.

(4) The 10% "tolerance" which was free of charge on rebuilding, improving, enlarging or changing the proportions of various uses in a building in many cases raised the refusal value above the existing use value in its narrow sense, so that other factors apart the charge tended to be less than the development value.

Development charges were an arbitrary fee[2] in that there was legitimate room for disagreement as to the figures to be placed on the refusal and consent values of a property. Even in a pre-Act valuation of a property, say for sale, a divergence of up to 15% between the estimates of two valuers was no reflection on their competence. But in the absence of useful information about rents paid, the estimation of a refusal value was extremely difficult, since land very rarely changes hands at existing-use value (refusal value) where it has any development potential. Nor was consent value much easier to estimate; it is revealing that the rents paid for factory space in the New Towns were sometimes used in the south of England as a basis for assessing the consent value for factories of land elsewhere. And where a consent value was reached by deducting the cost of development from the present value of the expected rental value of the developed property,[3] a small change in the expected future rental value per foot of floor space might make a big difference in the development charge. Furthermore, there was room for considerable ingenuity in securing that the part of a proposed extension which was allowed as being within the 10% tolerance[4] was the most valuable part.

It is evident that there was considerable room for argument between a developer and a district valuer. The Central Land Board said:[5] "The process is not so much one of bargaining, as

[1] *I.e.*, where they would fetch a positive price if all the licences the Government is prepared to grant were auctioned.

[2] The literature of public finance uses the word "fee" for such a payment.

[3] The "residual" method.

[4] *I.e.*, exempt from charge.

[5] Second annual report, p. 6.

has been suggested, but rather of investigating merits in the light of all available information." Many developers, however, regarded this process as one where they used every argument they could think of to induce the district valuer to lower his figure. But the approach of different district valuers could differ, and there were cases where a developer and district valuer spent several hours trying to get the charge as low as possible. Also, it was argued that just because there was no appeal against a determination of development charge, district valuers were more generous than they would have been had a right of appeal been instituted. Lastly, when a district valuer was asked to give an informal preliminary indication, prior to formal determination, of development charge, he would obviously prefer to err by giving too high a figure rather than too low a figure, since it was much easier to reduce it later on than to raise it.

Development charge had normally to be paid in a single capital sum before development commenced, although in order that protracted negotiations should not hold up development the Central Land Board occasionally accepted a covenant to pay the charge as finally determined. The disadvantageous effect of this upon the developer's liquidity was removed in many cases from May 1952 when developers were allowed to set off charge to an amount not exceeding 80% of their agreed claim upon the £300 million compensation fund against that claim. In the case of certain single-house plots and "near-ripe" land owned by builders which had been promised 100% compensation for loss of development rights, a complete offset was allowed since the coming into force of the Act. But if the Treasury scheme for the distribution of the £300 million (in Government stock) had been introduced in July 1953 as was provided, offsetting would have no longer been possible.

It is impossible to discover how much development charges prevented development by people or firms in possession of the land which they wished to develop. There may have been very few cases where developers decided to stop when the final determination of the charge was made. Such final determination was only made, however, when the applicant had the necessary planning permission, building licence, etc., so that evidence on the last point would not be conclusive, since the charge may have put off developers right at the start.

Two of the four factors listed above as causing development charges to be below the level which would have completely checked development would probably have been temporary.

First, the scarcity value of building licences may disappear.[1] Second, the 10% tolerance on the extension of existing buildings was being used up, at least as concerns industrial buildings. It must be remembered that if development charges were not to check those types of development liable to charge it was not sufficient that they should have left developers a profit; this profit must have been greater than they could earn on alternative uses of their capital. These considerations lead to two important conclusions :

(1) Development charges were likely to have become considerably more restrictive in their effects than they were up to the time of their repeal.

(2) It is likely that development charges affected the type of development, increasing the proportion of development which was not liable to charge (*e.g.*, agricultural improvements, small extensions of existing buildings, conversion of big houses into flats). The relative encouragement of agriculture was no doubt deliberate, but otherwise the effect on the pattern of development seems to have been arbitrary.[2]

In cases where the developer had to acquire the land on which he developed there are some additional factors to be considered. It was one of the principles of the Act that the development value of land was taken out of private ownership (£300 million being granted as compensation) so that it had to be bought back by developers from the Central Land Board, the fee being the development charge. As a corollary of this the "Governing Principle" of the Development Charge Regulations was that "so far as is practicable" land should freely change hands at existing-use value.[3] Since this was normally the same as refusal value, the aim was that the total amount paid in purchase price and development charge by a developer should be the consent value of the land, which was rarely more than the price he would have paid in the absence of the Act. In fact, however, private sales of land with any development potential at existing-use value were the exception, not the rule. This requires discussion, firstly, of why

[1] It is already less than in, say, 1946, since building costs have risen more than the price with vacant possession of some types of buildings.

[2] In the debates on the Bill the possibility was mooted that differential rates of development charge could be used as an instrument of planning to stimulate desired development and check undesired development.

[3] Except where (i) the vendor accepted liability for development charge; (ii) near-ripe and single-plot land was sold; (iii) where local authorities and statutory undertakers disposed of land they had previously been using, in which case the "prevailing use" was free of charge; and (iv) dead-ripe land was sold.

owners often would not (and will not) willingly dispose of land at existing-use value, and, secondly, of why developers were prepared to pay more than existing-use value despite the charge.

The case of the vendor (or grantor of a long lease) is simple.[1] The minimum price at which he would be willing to sell land will be the capital loss he would suffer if it were confiscated without compensation. For an investor-owner this approximates to existing-use value, provided that he capitalises the returns from the property at the market rate for the type of property in question, and provided that the present value of the reversion includes no potential development value.

In the case of owner-occupiers a possible reason for unwillingness to sell at existing-use value is that they may suffer severance, disturbance, injurious affection or temporary loss of profits, depending on circumstances. The Central Land Board, however, stated that it would "in such cases make a proper allowance in arriving at the development charge." [2] If this allowance included such a sum as was necessary to compensate the owner for the bother and inconvenience caused by surrendering his property as well as for all the pecuniary loss involved, no difficulty need have arisen under this head.

Where a property had some development value, the owner would, when development charge existed, only have been prepared to sell at existing-use value (*i.e.*, at a price reflecting no part of the development value) if he expected that the charge payable upon development by him would have reduced its profitability to zero. In other words, if development charges were high enough for owners of properties with a development value to be willing to sell those properties at existing-use value, they would have had to be high enough to remove completely the profitability of the development of those properties by their owners.

The Central Land Board listed three reasons why developers should have been unwilling to purchase land at more than its existing-use value : [3]

> "(1) No compensation is generally payable on refusal of planning permission. Thus if a person buys land above existing use value and fails to get planning permission for further development, he will be out of pocket on the deal.
>
> "(2) The development charge will not be assessed at a lower figure because a purchase has taken place above

[1] The complications of assignment of the compensation claim and uncertainty regarding the future of the Act are mentioned later on.

[2] *Practice Notes*, p. 19. [3] *Ibid.*, p. 2.

existing use value. Thus again, such a purchaser will pay more than he should.

"(3) Most compulsory purchases, including those of the Central Land Board, are to be at existing use value. So yet again a previous purchaser at a higher figure will be a loser."

The first reason cannot have been very important: a developer who knows his business will not acquire land unless he is fairly certain that he can get planning permission. Nor could the fear of compulsory purchase have been very significant; it is possible to discover whether acquisition by a local authority, if not by a statutory undertaker, is likely, while the compulsory purchase powers of the Central Land Board were rarely exercised, and then only where an owner would not sell at existing-use value to a developer.

This leaves the second reason, and here the point is not how much the developer "should" have paid but how much he could afford to pay. If the maximum amount he would have paid for the developed property rather than go without it minus the cost of the development operations was £*a*, and the consent value was £*b*, then he would have preferred to pay up to £*a* − £*b* above refusal value for the land than not develop. But such an excess normally existed for the four reasons listed above on pp. 307–8.[1] If this excess were less than the minimum excess above existing-use value at which the present owner of the land would sell it, then the charge would have prevented development. If it were greater, then the charge would not have abolished, but only reduced, the profitability of the development. Even so, however, the existence of the charge might have caused the developer to go elsewhere if there were an alternative property available the existing use of which was the same as the developer's proposed use so that the charge on it would be nil (unless there were an extension above the 10% tolerance). Thus, whereas without the Act a developer wishing to build a factory might prefer site 1 (heath) to site 2 (bombed factory), development charges might have led him to locate on site 2.

[1] The following extract is from p. 10 of the second report of the Central Land Board. "Building licences are difficult to get and the developer who has been fortunate enough to obtain one is often willing to pay a much inflated price for a piece of land upon which to build. In other words a 'scarcity value' attaches at present to the possession of a licence. The theory that the development charge would leave the developer unwilling or unable to pay more than existing use value for his land is not at present working out in practice, especially since a would-be house-owner who pays building value to the seller of the land, as well as a development charge to the Board, is still paying less in the total cost of his house than he would have to pay for an existing house with vacant possession."

The argument of the last paragraph leads to the following conclusions concerning development in those cases where the developer had to acquire land :

(1) Development charges were liable to render some such development unprofitable, thus stopping it.

(2) They may have altered the pattern of the development that did take place by stimulating redevelopment as against new development.

(3) As tolerances were used up and if building costs rose relatively to the price of properties with vacant possession, more and more development would have been prevented by development charges.

Another factor must now be mentioned. While many owners sold at prices much in excess of existing-use value,[1] others held their land off the market altogether for two reasons. Firstly, the Central Land Board only exercised its power of compulsory purchase where the owner of land had actually offered to sell (at a price above existing-use value). Secondly, in the early days of the Act people were waiting to see how it would work; later they waited to see how it would be altered.[2] Lastly, there is a reason in a different category from those so far discussed why more than existing-use value was paid for land. This is that the vendor (or lessor) sometimes assigned his claim on the £300 million. In the early days of the Act the general expectation was that such claims were worth very little; [3] the transfer of them served as an excuse for the high price. When expectations became more definite and more optimistic they probably figured more explicitly in negotiations and in the price paid. Later still, the expectation that the financial provisions would be altered again caused uncertainty as to the worth of claims.

Development charges have now been abolished largely because of the strong disincentive effect which they exerted, or would have come to exert, on private development of land, both directly and by upsetting the market in land for development.

[1] It may be noted that since land capable of development changed hands at prices above refusal value and below consent value, the records of many current transactions were of no help to district valuers in assessing development charges. Since sales free of charge of single plots and builders' near-ripe land were to cease in January 1953 and since pre-Act values were becoming more and more out of date, it follows that the assessment of charges would have become more arbitrary.

[2] When it appeared that the average rate of payment on compensation claims would be 80%, owners became less likely to sell for liquidity reasons.

[3] In January 1951 a claim for £4,193 was sold by auction for £220; other sales took place at 2*s.* 6*d.* in the pound.

Since, except in the longest of long runs, they must inevitably have reduced the profitability of development and/or the price at which land could be sold for development, this is hardly surprising. The important question which the experiment raises is, therefore, how it was that these results were not foreseen when the scheme was introduced.

The answer would seem to be that the attention of its promoters was fixed almost exclusively on the distributional aspect of the problem. Granted the premisses of the argument, the scheme was indeed a most ingenious method of securing that landowners did not obtain " too much " compensation. But only one of its effects upon the allocation of resources was considered; that by making planning cheaper it would enable more to be done. Its other effect upon the allocation of resources, on development by private property owners, was not sufficiently considered. Thus the distributional aspect of the compensation–betterment problem received relatively too much attention and the allocational aspects relatively too little. Has this mistake been made again ?

The White Paper Proposals

The White Paper Cmd. 8699 " Amendment of Financial Provisions " was published in November 1952, together with the Town and Country Planning Bill. The latter provided that :

(1) Development charges be abolished.

(2) No distribution of the £300 million compensation fund be made.

The White Paper contained a broad outline of the proposals to be embodied in the main amending legislation (which will not be introduced before the autumn of 1953). Without this further legislation the price paid for land on compulsory acquisition is at present its existing-use value, and no compensation is payable on planning restrictions which do not interfere with existing use. The proposals are that in the case of land for which a claim on the £300 million for loss of development value has been accepted by the Central Land Board, compensation up to 100% of the value of the claim shall be paid :

(1) From central funds if a planning restriction is imposed which prevents development (*i.e.*, does not interfere with existing use). Not all such restriction is to carry a right to compensation, however.

(2) By the acquiring authority, in addition to the existing use value, if the land is compulsorily acquired.[1]

Existing-use value in this context is apparently to be the same as refusal value in the assessment of development charge, *i.e.*, the value of land is to be assessed on the assumption that all operations and changes of use which would have been liable to charge are permanently prohibited.[2]

In addition, the new legislation will have to deal with a large number of technical difficulties which will arise both from using the claims for loss of development value as the basis for compensation and from the transition period. There will also have to be special arrangements in the case of land owned by local authorities and statutory undertakers. Furthermore, there is the problem of the extent to which compensation should be paid retrospectively where restrictions have been imposed or development charge levied in the period up to November 1952. Apart from its technical aspects, this latter problem is entirely a matter of distribution, however. On this, and the fairness or unfairness of using 1947 development value as the basis for compensation, nothing will be said here, except to point out that what is considered just must depend on expectations about the future movement of the general price level.

Paragraph 35 of the White Paper, which concerns the scope of compensation for planning restrictions on land with an admitted claim for loss of 1947 development value, runs as follows :

> "Her Majesty's Government do not intend that compensation should be payable in every case in which permission to develop is refused or conditions are attached to a permission. They consider it reasonable to exclude compensation in respect of restrictions based on the principle of good neighbourliness, and there is precedent for doing so in the Planning Acts of 1932. On this principle compensation will not in general be payable for refusal to allow a change in the use of a building, or refusal to allow a particular type of building, or for restrictions on the size of a building; nor for refusal to permit development which

[1] "Where some part of the admitted claim has already been used to compensate for a partial restriction of development, the amount payable on complete restriction or on compulsory acquisition will be correspondingly reduced . . . . Additional compensation will be paid for abortive expenditure incurred in good faith on the strength of a planning permission which cannot be used because of a subsequent compulsory acquisition." (White Paper, para. 28.)

[2] It would probably make no difference in the vast majority of cases if existing-use value were to be taken in its narrower sense, as in rating valuations where the *rebus sic stantibus* rule applies.

> would place an undue burden on the community (*e.g.*, in the provision of services) or which would endanger public health or safety. These are only examples and the precise extent of the exclusions remains to be worked out."

It is evident that the considerations behind this passage are almost entirely distributional.[1] But the allocational aspects also deserve consideration. There are two questions to be answered. Firstly, are the principles of compensation such that the compensation figure in any particular case is useful in deciding whether or not the planning restriction in question ought to be imposed? The answer to this is in the negative, since the current development value may be very different from the 1947 development value. [This is not meant to imply that the current development value of the property is the only factor relevant to the decision whether to impose a restriction, but merely that it is one of the many factors which should be taken into account. *Ceteris paribus* the greater is the development value the smaller will be the gain (or the greater the disadvantage) of preventing or limiting the development whose prospect confers value upon the land in addition to that arising from its existing use.]

Secondly, and much more important, are the principles of compensation, such that the cost to the planning authority of imposing restrictions will be neither so high that they cannot afford to do all that is desirable, nor so low that they do more than is desirable? The answer to the first part of the question is certainly in the affirmative; the answer to the latter part may be in the negative. This is because compensation for those planning restrictions which do not interfere with existing use is to be paid from central funds on the decision of local planning authorities. Thus, whether or not there is a claim for loss of development value for a particular property and whether or not compensation is payable for the type of planning restriction in question, the cost to the decision-taking authority of imposing that restriction on that property is nil. This *may* lead some planning authorities to impose too many restrictions, particularly since estimates of the development values destroyed by restrictions are not automatically made available to them.[2]

Similar questions may now be asked in examining the allocative aspect of the principles of compensation for compulsory

[1] The reference to precedent presumably implies that the fact that Parliament made certain decisions in 1932 proves them to be wise decisions, an argument which the present Government might be reluctant to apply to some Parliamentary decisions of 1945–50.

[2] See the preceding paragraph.

acquisition, where it is the acquiring authority that is to pay the compensation. Where property currently has a development value, its value for compulsory acquisition will very often be less than its market value,[1] so that its cost to the acquiring authority will be less than its value to a private developer. This may affect the amount of property compulsorily acquired; it is very likely to determine which particular properties are acquired. Suppose, for example, that a school is to be built and that from the point of view of the education authorities two alternative sites are equally suitable. The site chosen will presumably be that which is cheapest to acquire, *i.e.*, whose existing-use value + 1947 development value (if any) is lowest; yet this may be the site with the higher current market value and therefore, *cet. par.*, not the site which (from the allocational aspect) should be chosen.

These brief considerations indicate that unless planning authorities possess great wisdom the proposed basis for compensation has certain drawbacks. Compensation at market-value would reduce the need for wisdom and make valuation for compensation less arbitrary. On the other hand, it might be considered too favourable (distributionally) to property owners and too expensive for planning authorities, given their present financial resources, to be able to afford enough planning. A new general property tax the proceeds of which were given to planning authorities in the form of lump-sum grants could deal with these problems, however. Thus the question of whether market value should replace the compensation formula in the new proposals can be discussed without reference to considerations of fairness in so far as property-owners are considered as a group.

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[1] It will be equal where current development value is no greater than its 1947 development value.

A MODEL OF INCOME DISTRIBUTION

Summary

In the models discussed in this paper the distribution of incomes between an enumerable infinity of income ranges is assumed to develop by means of a stochastic process. In most models the stochastic matrix is assumed to remain constant through time. Under these circumstances, and provided certain other conditions are satisfied, the distribution will tend towards a unique equilibrium distribution dependent upon the stochastic matrix but not on the initial distribution. It is found that under fairly general conditions, provided the prospects of change of income as described by the matrix are in a certain sense independent of income for incomes above some limit then the Pareto curve of the equilibrium distribution will be asymptotic to a straight line. This result is preserved even when some of the effects of age on income are allowed for, and also when allowance is made for the effect of an occupational stratification of the population. Some consideration is also given to the fact that changes in the income distribution may cause the stochastic matrix itself to change. Some discussion is also given of cases where the Pareto curve of the equilibrium distribution is not asymptotic to a straight line.

§ 1. Introduction

In a recent article [1] instructions were given for graduating the distribution of personal incomes before tax by means of the distribution function

$$F(t) = \frac{N}{\theta} \tan^{-1} \frac{\sin \theta}{\cos \theta + (t/t_0)^\alpha} \tag{1.1}$$

where $F(t)$ is the number of incomes exceeding t, and N, α, t_0 and θ are fitted parameters. For high incomes this formula closely approximates the form

$$F(t) = Ct^{-\alpha} \tag{1.2}$$

with

$$C = \frac{N\pi}{180} t_0^\alpha \sin \theta$$

which is the form predicted by Pareto's law.

It has been frequently claimed that actual distributions do

[1] Champernowne [3]. See references at the end of this article.

approximate closely to this form for high income levels, and it is the purpose of this note to seek theoretical reasons for this. I am indebted to Mr. M. Crum of New College, Oxford, for critical advice and enabling me to correct several inaccuracies. Needless to say, he is in no degree responsible for any mis-statements which may remain.

§ 2. The Development of Income Distribution Regarded as a Stochastic Process

The forces determining the distribution of incomes in any community are so varied and complex, and interact and fluctuate so continuously, that any theoretical model must either be unrealistically simplified or hopelessly complicated. We shall choose the former alternative but then give indications that the introduction of some of the more obvious complications of the real world does not seem to disturb the general trend of our conclusions.

The ideas underlying our theoretical model have been briefly indicated in an earlier publication,[1] but a more complete statement may be conveniently put forward at the present time, since recent developments in the theory of stochastic processes involving infinite matrices have enabled more rigorous and neater formulation to be made than was previously found possible.

We shall suppose that the income scale is divided into an enumerable infinity of income ranges, which, for reasons to be later explained, we shall assume to have uniform proportionate extent. For example, we might consider the ranges of income per annum to be £50–£100, £100–£200, £200–£400, £400–£800, . . . although a finer graduation would be more interesting. We shall regard the development through time of the distribution of incomes between these ranges as being a stochastic process, so that the income of any individual in one year may depend on what it was in the previous year and on a chance process. In reality new income-receivers appear every year and old ones pass away, but an obvious and fruitful simplifying assumption to make is that to every "dying" income-receiver there corresponds an heir to his income in the following year, and vice versa. This assumption will imply that the number of incomes is constant through time and that the incomes live on individually, although their recipients are transitory. Not very much difficulty would be involved in allowing more or less than one heir to each dying

[1] Champernowne [1], [2].

person, but on the whole the loss of simplicity would be likely to outweigh the advantages due to the gain in verisimilitude.

Under such assumptions any historical development of the distribution of incomes could be summarily described in terms of the following vectors and matrices, $X_r(0)$, telling us the number $X_r(0)$ of the income-receivers in each range R_r, $r = 1, 2 \ldots$ in the initial year Y_0 and a series of matrices $p'_{rs}(t)$ telling us in each year Y_t, the proportions of the occupants of R_r who are shifted to range R_s in the following year Y_{t+1}. With these definitions the income distributions $x_r(t)$ in the successive years will be generated according to

$$X_s(t+1) = \sum_{r=0}^{\infty} X_r(t) p'_{rs}(t) \tag{2.1}$$

If we suppose, as is convenient, that the income ranges are paraded in order of size (there being a lowest income range R_0), then there will be some advantage in defining a new set of matrices

$$p_{ru}(t) = p'_{r,r+u}(t) \tag{2.2}$$

and rewriting (2.1) in the form

$$X_s(t+1) = \sum_{u=-\infty}^{s} X_{s-u}(t) p_{s-u,u}(t) \tag{2.3}$$

$p_{ru}(t)$ then tells us the proportion in Y_t of the occupants in R_r who shift up by various numbers u of ranges.

The advantage arises from the fact that in the real world the sizes of such shifts from year to year are mostly fairly limited, so that each $p_{ru}(t)$, regarded as a frequency distribution in u, is likely to be centred round $u = 0$.

In order to make simple models, we should like to be able to assume that the $p_{ru}(t)$ regarded as a frequency distribution in u differed very little in form for variations over a wide range of values of r and t.

When we consider the practical counterpart to this suggestion we see that it means that the prospects of shifts upwards and downwards along the ladder of income ranges differ little as between the occupants of different income ranges, and differ little from year to year.

This obviously cannot apply to all income ranges. For example, a rich man's income must be allowed some risk through death or misadventure of being degraded to a lower range in the following year; but the incomes in the lowest range cannot by definition be allowed this possibility. Again the *absolute* changes in income are liable to be much higher for incomes of £1,000,000 than for incomes of £100, so that the ranges must

have a greater absolute width for high than for low incomes if our simplification is to have any plausibility. The obvious choice of ranges is that indicated above whereby each range has equal proportionate extent, for then any universal effects, such as price and interest movements, which are likely to alter income prospects for widely different ranges R_r and R_q in approximately the same manner proportionately, will affect the various functions $p_{ru}(t)$ and $p_{qu}(t)$ in roughly the same fashion.

Our other assumption that the functions $p'_{r,\,r+u}(t) = p_{ru}(t)$ remain constant as t changes through time, takes us far from reality: but an essential preliminary to the study (not here attempted) of the dynamic equilibrium with moving $p'_{rs}(t)$ is to examine the static equilibrium generated by a fixed set of functions $p'_{rs}(t)$.

For it is known that under very general conditions the repeated application of the same set of income-changes represented by an irreducible matrix $p'_{rs}(t)$ will make *any* initial income distribution eventually approach a unique equilibrium distribution which is determined by the matrix $p'_{rs}(t)$ alone. Considerable interest may therefore be found in the question of the type of income distribution which will correspond to the repeated operation of the changes represented by any realistic form of the matrix $p'_{rs}(t)$.

It would be a great advantage in constructing models of income distribution if we had empirical evidence about the matrices $p'_{rs}(t)$ describing actual movements of income in modern

TABLE I

Gross income 1951, £:	0–199	200–399	400–599	600–999	1000 and over
1952 income as percentage of 1951 income.	Proportion of cases per hundred.				
150 and over	7·53	2·62	0·99	0·70	0·36
125 to 149	4·65	5·47	1·90	3·87	0·89
115 to 124	4·68	6·50	6·68	5·64	6·57
105 to 114	24·53	20·69	23·36	23·87	20·35
101 to 104	7·67	16·16	18·13	14·40	7·00
100 exactly	46·51	36·53	30·33	29·57	43·55
96 to 99	0·27	0·96	2·36	2·61	1·10
86 to 95	1·47	4·93	6·69	4·12	5·61
76 to 85	0·74	2·23	5·69	6·93	6·52
57 to 75	1·95	2·41	2·81	7·06	7·32
50 and under	—	1·35	1·06	1·21	0·72
Not available	—	0·14	—	—	—
All ratios	100·00	100·00	100·00	100·00	100·00

communities. Some such evidence could presumably be compiled from the records of the income-tax authorities, but this information has not been tapped for such a purpose. The only figures available to the writer have been kindly supplied by the Institute of Statistics at Oxford and are a by-product of their survey of savings. Unfortunately these figures are regarded as unreliable by the authors of the survey, and they can therefore merely be given in illustration of the discussion which is to follow.

Table I gives a summary of the estimates provided by the Institute of Statistics. With comparatively little manipulation, these figures can be used to provide an estimate of the elements in the matrix $p'_{rs}(t)$ for low values of s and t. Taking for R_0 the range £89–£111, and in general for R_r the range $£10^{1\cdot95+r/10}$ to $£10^{2\cdot05+r/10}$, the resulting estimates for $p'_{rs}(t)$ for $r = 0$–11, $s = 0$–14 are shown in Table II.

This table shows some degree of regularity in the figures in each diagonal, with a tendency for the lowest incomes to shift upwards by rather more ranges on the average than the high incomes. The reader may find it useful to refer back to it later when considering some of the simplifying assumptions which we will use in constructing our models.

It is unfortunate, however, that the figures tell us virtually nothing about the changes among the incomes of the rich: it is with these that our basic postulate will be mainly concerned.

§ 3. A Simple Model Generating an Exact Pareto Distribution

As an expository device it will be convenient at this stage to consider what will result from very simple assumptions indeed about the matrix $p'_{rs}(t)$ and the corresponding distributions $p_{ru}(t) = p'_{r,r+u}(t)$. Although the assumptions of this section do not approach reality at all, the results they lead to will resemble reality in one respect, and this will assist an understanding of one possible explanation of this aspect of actual distributions.

Let us assume, then, that for every value of t and r, and for some fixed integer n

$$(3.1) \qquad p'_{r,r+u}(t) = p_{r,u}(t) = 0 \text{ if } u > 1 \text{ or } u < -n$$

This means that no income moves up by more than one income range in a year, or down by more than n income ranges in a year,

$$(3.2) \qquad p'_{r,r+ru}(t) = p_{r,u}(t) = p_u > 0$$

if $\qquad -n \leqslant u \leqslant 1$ and $u > -r$.

TABLE II

Estimates of Some Elements in the Matrix p'_{rs} *for England and Wales* 1951–52

Income range.	$s =$	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	$r =$	p'_{rs}.														
£89–£111	0	n.a.	n.a.	n.a.	n.a.	n.a.	—	—	—	—	—	—	—	—	—	—
£112–£141	1	0·020	0·672	0·202	0·083	0·023	—	—	—	—	—	—	—	—	—	—
£142–£177	2	0·015	0·020	0·674	0·204	0·068	0·019	—	—	—	—	—	—	—	—	—
£177–£221	3	0·007	0·014	0·030	0·676	0·205	0·053	0·015	—	—	—	—	—	—	—	—
£222–£281	5	—	0·012	0·015	0·040	0·672	0·207	0·043	0·011	—	—	—	—	—	—	—
£282–£354	5	—	—	0·016	0·017	0·052	0·666	0·209	0·033	0·007	—	—	—	—	—	—
£355–£445	6	—	—	—	0·015	0·018	0·075	0·666	0·200	0·023	0·004	—	—	—	—	—
£446–£562	7	—	—	—	—	0·013	0·020	0·096	0·658	0·198	0·013	0·002	—	—	—	—
£563–£707	8	—	—	—	—	—	0·016	0·035	0·100	0·632	0·200	0·015	0·002	—	—	—
£708–£892	9	—	—	—	—	—	—	0·018	0·049	0·104	0·607	0·205	0·015	0·002	—	—
£893–£1119	10	—	—	—	—	—	—	—	0·017	0·050	0·106	0·625	0·190	0·010	0·002	—
£1120–£1409	11	—	—	—	—	—	—	—	—	0·015	0·051	0·108	0·646	0·178	0·005	0·001

We may refer to this equation (3.2), and to later modifications of it, as our *basic postulate*. It here means that the prospects of shifts upwards and downwards along the ladder of income ranges are distributed in a manner independent of present income, apart from the limitations imposed by the impossibility of descending below the bottom rung of the ladder. This is the postulate which we shall retain in some modified form in nearly all our models, and which always leads to an income distribution which obeys Pareto's law at least asymptotically for high incomes.

We also need to assume that for each value of r and t

$$\sum_{s=0}^{\infty} p'_{rs}(t) = \sum_{u=-r}^{\infty} p_{ru}(t) = 1 \tag{3.3}$$

which by (3.2) also implies

$$\sum_{u=-n}^{1} p_u = 1. \tag{3.3a}$$

This assumption (3.3) expresses the fiction that all incomes preserve their identity throughout time in the manner described in Section 2 above.

One other assumption must be introduced in order to ensure that the process is not dissipative, *i.e.*, that the incomes do not go on increasing indefinitely without settling down to an equilibrium distribution. Let us denote

$$g(z) \equiv \sum_{u=-n}^{1} p_u z^{1-u} - z \tag{3.4}$$

then our stability assumption is that

$$g'(1) \equiv -\sum_{u=-n}^{1} u p_u \text{ is positive.} \tag{3.5}$$

This means that for all incomes, initially in any one of the ranges R_n, R_{n+1}, R_{n+2} . . ., the average number of ranges shifted during the next year is negative.

This completes the list of assumptions for our first model and when $n = 5$ they give rise to a matrix of Diagram 1.

Now we may determine the equilibrium distribution corresponding to any matrix $p'_{r,r+u}(t) = p_{r,u}(t)$ conforming to our assumed rules. Owing to the uniqueness theorem mentioned above in Section 2, it will be sufficient to find any distribution which remains exactly unchanged under the action of the matrix $p'_{rs}(t)$ for one year. For this distribution when found must (apart from an arbitrary multiplying constant) be the unique distribution which will be approached by all distributions under

$s=$	0	1	2	3	4	5	6	7	8 . . . .
$r=$	$p'_{rs}(t)$								
0	$1-p_1$	p_1	0	0	0	0	0	0	0 . . . .
1	$1-p_0-p_1$	p_0	p_1	0	0	0	0	0	0 . . . .
2	$p_{-5}+p_{-4}+p_{-3}+p_{-2}$	p_{-1}	p_0	p_1	0	0	0	0	0 . . . .
3	$p_{-5}+p_{-4}+p_{-3}$	p_{-2}	p_{-1}	p_0	p_1	0	0	0	0 . . . .
4	$p_{-5}+p_{-4}$	p_{-3}	p_{-2}	p_{-1}	p_0	p_1	0	0	0 . . . .
5	p_{-5}	p_{-4}	p_{-3}	p_{-2}	p_{-1}	p_0	p_1	0	0 . . . .
6	0	p_{-5}	p_{-4}	p_{-3}	p_{-2}	p_{-1}	p_0	p_1	0 . . . .
7	0	0	p_{-5}	p_{-4}	p_{-3}	p_{-2}	p_{-1}	p_0	p_1 . . . .
8	0	0	0	p_{-5}	p_{-4}	p_{-3}	p_{-2}	p_{-1}	p_0 . . . .
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.

DIAGRAM 1

the repeated action of the matrix multiplier $p'_{rs}(t)$ year after year.

Our assumptions (3.1) to (3.5) have deliberately been chosen so as to make the solution obvious. Indeed, if X_s is the desired equilibrium distribution, we need by (2.3), (3.1) and (3.2)

$$X_s = \sum_{-n}^{1} p_u X_{s-u} \quad \text{for all } s > 0 \tag{3.6}$$

and

$$X_0 = \sum_{-n}^{0} q_u X_{-u} \quad \text{where } q_u = \sum_{v=-n}^{u} p_r. \tag{3.7}$$

We need only satisfy (3.6), since (3.6), (3.1), (3.2) and (3.3) ensure the satisfaction of (3.7) as well.

Now an obvious solution of (3.6) is

$$X_s = b^s \tag{3.8}$$

where b is the real positive root other than unity of the equation

$$g(z) = \sum_{u=-n}^{1} p_u z^{1-u} - z = 0 \tag{3.9}$$

where $g(z)$ was already defined in (3.4) above.

Descartes' rule of signs establishes the fact that (3.9) has no more than two real positive roots: since unity is one root, and $g(0) = p_0 > 0$, and $g'(1) > 0$ by (3.5), the other real positive root must satisfy

$$0 < b < 1. \tag{3.10}$$

Hence the solution (3.8) implies a total number of incomes given by

$$N' = \frac{1}{1-b} \tag{3.11}$$

and, to arrange for any other total number N, we need merely modify (3.8) to the form

$$X_s = N(1 - b)b^s. \tag{3.8a}$$

Now suppose that the proportionate extent of each income range is 10^h, and that the lowest income is $y_{\min.}$: then X_s is the number of incomes in the range R_s whose lower bound is given by

$$y_s = 10^{sh} y_{\min.} \text{ whence } \log_{10} y_s = sh + \log_{10} y_{\min.} \tag{3.12}$$

By summing a geometrical progression, using (3.8a), we now find that in the equilibrium distribution the number of incomes exceeding y_s is given by

$$F(y_s) = Nb^s \text{ whence } \log_{10} F(y_s) = \log_{10} N + s \log_{10} b \tag{3.13}$$

Now put

$$\alpha = \log_{10} b^{-1/h} \text{ and } \gamma = \log_{10} N + \alpha \log_{10} y_{\min.} \tag{3.14}$$

Then it follows from (3.12) and (3.13) that

$$\log_{10} F(y_s) = \gamma - \alpha \log_{10} y_s \tag{3.15}$$

This means that for $y = y_0, y_1, y_2 \ldots$, the logarithm of the number of incomes exceeding y is a linear function of y. This states Pareto's law in its exact form.

Thus if all ranges are of equal proportionate extent, our simplifying assumptions ensure that any initial distribution of income will in the course of time approach the exact Pareto distribution given by (3.14), (3.15).

The very simple model discussed in this section brings out clearly the tendency for Pareto's law to be obeyed in a community where, above a certain minimum income, the prospects of various amounts of percentage change of income are independent of the initial income.

Most of the remainder of the article will be spent in generalising this very simple model so that it is less unrealistic.

In actual income distributions, Pareto's law is not even approximately obeyed for low incomes: if logarithm of income is measured along the horizontal axis, the frequency distributions found in practice are not J-shaped like that obtained in our model, but single humped and moderately symmetrical. The first modification which we make to our model is to remove the assumption that there is a lowest income range R_0 and to set up conditions which lead to a two-tailed distribution, one for the poor and one for the rich.

In these simple models, Pareto's law is obeyed exactly, not merely asymptotically. We next introduce two generalisations

which limit observance of the law to the occupants of high income groups and render it no longer exact but asymptotic. These generalisations consist in :

(i) allowing incomes to shift upwards by more than one range in a year;

(ii) limiting our basic assumption (3.2) that the prospects of various amounts of percentage change of income are independent of initial income to apply to higher incomes only.

These two generalisations bring our model much closer to the conditions indicated by Table II above.

In real life a man's age has a great influence on his prospects of increasing his income. Our next generalisation takes this into account. We now allow a man's prospects of change of income to depend on his age. Finally, we use the same technical device to allow a man's occupation to influence his prospects of change of income.

Despite these generalisations of the model, it is still found that the Pareto curve must be asymptotic to a straight line. Is it then possible that the approximate linearity over high income ranges of the Pareto curves found for many modern communities is due to the approximate fulfilment in the real world of our basic assumption? This question is briefly discussed in the final sections of the paper.

§ 4. A Model Generating a Two-tailed Income Distribution Obeying Pareto's Law

The simple model described in the last section generated a distribution with only one Pareto tail. The essential modifications required to introduce a two-tailed distribution are the following :

(i) We drop the assumption that there is a lowest income-range R_0, and adopt an infinite sequence of income ranges R_r, of equal proportionate extent, allowing r to run from minus infinity to plus infinity.

(ii) We adopt assumptions about that part of the matrix $p'_{rs}(t)$ for which r is negative analogous to those adopted about that part for which r is positive.

(iii) We allow for some movement of incomes to and fro between ranges R_r for which r is positive and those for which r is negative.

In particular, we assume as in (3.1)

(4.1) $p'_{r,r+u}(t) = p_{ru}(t) = 0$ when $r \geqslant 0$ and $u \geqslant 1$ or $u < -n$

and we retain our basic postulate (3.2)

(4.2) $p'_{r,r+u}(t) = p_{ru}(t) = p_u > 0$ if $-n \leqslant u \leqslant 1$ and $u > -r$

We further assume that

(4.3) when $r \geqslant 0$ and $u < -r$, and when $r < 0$
and $u > r$, $u < -1$ or $u > v$,
$p'_{r,r+u}(t) = p_{ru}(t) = 0$

We now introduce a positive integer r and non-negative constants $\pi_{-1}\, \pi_0\, \pi_1 \ldots \pi_v$ and satisfying

(4.4) $\pi_{-1} > 0\ \pi_0 > 0\ \pi_1 > 0\ \pi_v > 0\ \lambda > 0\ \sum_{s=1}^{v} \pi_s = 1\ \sum_{u=1}^{v} u\pi_u > 1$

$1 - \lambda - \pi_{-1} > 0 \quad 1 - \lambda - p_1 > 0$

and put

(4.5) $p_{ru}(t) = \pi_u$ when $r < 0$ and $u < -r - 1$
and $-1 \leqslant u \leqslant v$

$p_{0,-1}(t) = p_{-1,2}(t) = \lambda \quad p_{00}(t) = 1 - \lambda - p_1 > 0$
$p_{-10}(t) = 1 - \lambda - \pi_{-1} > 0$

and assume as before that for all r

(4.6) $\sum_{u=-\infty}^{\infty} p_{ru}(t) = 1$ and $p'_{r,r+u}(t) = p_{ru}(t)$.

These assumptions can best be understood by considering their effects when n and v take particular values. Thus when $n = 3$ and $v = 2$, they give rise to a matrix for $p'_{rs}(t)$ whose centre is of the following form :

$s =$	-4	-3	-2	-1	0	1	2	3	4	5
$r =$										
-5	π_1	π_2	0	0	0	0	0	0	0	0
-4	π_0	π_1	π_2	0	0	0	0	0	0	0
-3	π_{-1}	π_0	π_1	π_2	0	0	0	0	0	0
-2	0	π_{-1}	π_0	$1 - \pi_0 - \pi_{-1}$	0	0	0	0	0	0
-1	0	0	π_{-1}	$1 - \lambda - \pi_{-1}$	λ	0	0	0	0	0
0	0	0	0	λ	$1 - \lambda - p_1$	p_1	0	0	0	0
1	0	0	0	0	$1 - p_0 - p_1$	p_0	p_1	0	0	0
2	0	0	0	0	$p_{-2} + p_{-3}$	p_{-1}	p_0	p_1	0	0
3	0	0	0	0	p_{-3}	p_{-2}	p_{-1}	p_0	p_1	0
4	0	0	0	0	0	p_{-3}	p_{-2}	p_{-1}	p_0	p_1
5	0	0	0	0	0	0	0	p_{-2}	p_{-1}	p_0
6	0	0	0	0	0	0	0	p_{-3}	p_{-2}	p_{-1}

DIAGRAM 2

We retain our assumption (3.5) that

(4.7) $g'(1) = -\sum_{u=-n}^{1} up_u$ is positive

and introduce the analogous assumption that

$$\gamma'(1) = -\sum_{v=-1}^{m} v\pi_v \text{ is negative} \tag{4.8}$$

where

$$\gamma(z) \equiv \sum_{v=-1}^{1} \pi_v z^{1-v} - z \tag{4.9}$$

Then, by an argument analogous to that of Section 3, the equation

$$\gamma(z) = 0 \tag{4.10}$$

must have a single real root β satisfying

$$\beta > 1 \tag{4.11}$$

It may be easily verified that the distribution

$$\begin{aligned} X_s &= Ab^s \text{ when } s \geqslant 0 \\ X_s &= A\beta^{s+1} \text{ when } s < 0 \end{aligned} \tag{4.12}$$

satisfies the equilibrium condition

$$X_s = \sum_{r=-\infty}^{\infty} p'_{rs}(t) X_r \tag{4.13}$$

Hence for some value of A, this must be the equilibrium distribution towards which any actual distribution must tend under the repeated action of the multiplying matrix $p'_{rs}(t)$ determined by the various assumptions of this model.

To secure any total number of incomes, N say, we need only put

$$A = \frac{(1-b)(\beta-1)N}{2\beta - b\beta - 1} \tag{4.14}$$

In this solution there are two Pareto tails, one relating to high incomes and one to low incomes. The distribution is kept stable by the two conditions (4.7), (4.8), which ensure that for large incomes the expected change u is negative and for small incomes it is positive. This pair of conditions is needed to offset the continual dispersal of incomes due to the variance of the frequency distributions in u, p_u and π_u.

This example has been hand-picked so as to yield a crystal-clear solution, but one essential feature of this solution, namely the conformity to Pareto's law of the distribution, will be found to be approximately preserved through a series of modifications and relaxations of our simplifying assumptions. The basic postulate which leads to the approximate obedience of this law was retained in assumption (4.2), which determines that the functions of type $p_{ru}(t)$ should be the same for all values of r relating to high income ranges.

One minor generalisation which can be made to the above example without essentially altering the form of the solution is to enlarge the channels of communication between income ranges with $r \geqslant 0$ and those with $r < 0$, hitherto limited to the flow of a proportion λ from each of R_{-1} and R_0. We may adjust the values of $p'_{r,-1}(t)$ and $p'_{r0}(t)$ in such a manner as to allow the flow of incomes from each of $R_0R_1 \ldots R_{n-1}$ to R_{-1} and from each of $R_{-1}R_{-2} \ldots R_{-r}$ to R_0 without altering the solution further than to the form

$$(4.15) \qquad \begin{aligned} x_s &= Bb^s \text{ when } s \geqslant 0 \\ x_{-s} &= B\beta^{s-1} \text{ when } s < 0 \end{aligned}$$

where the ratio between β and B will now depend on the value of $p'_{r,-1}(t)$ and $p'_{r0}(t)$, and need no longer be unity.

§ 5. A More General Model Generating a Distribution Asymptotic to a Pareto Distribution

One of the most restrictive assumptions in the example we have discussed was that

$$p_{ru}(t) = 0 \text{ when } u > 1 \text{ and } r \geqslant 0$$

The abandonment of this assumption destroys the complete simplicity of the solution.

In order to concentrate attention on the new generalisation, let us first restore the assumption that R_0 is the minimum income range so that we shall only have to consider one tail of the distribution. Then let us replace the assumption (3.1) by

(5.1) $p_{ru}(t) = 0$ if $u > m$ a given positive integer or $u < -n$ and modify (3.2) to the form

(5.2) $p_{ru}(t) = p_u$ (defined for $u = -n, 1-n, \ldots, m$)

if $u + r \geqslant m$ where $\sum_{u=-n}^{m} p_u = 1$ and no p_u is negative.

We may retain assumptions (3.3), (3.4) and (3.5) (extending the summation in (3.4) and (3.5) from $-n$ to m) and add the additional assumption, $p_m > 0$.

The assumptions made so far have defined $p'_{rs}(t)$ for $s \geqslant m$ and determined $\sum_{s=0}^{m-1} p'_{rs}(t)$ for each $r = 0, 1, \ldots, n$ and $\sum_{s=r-n}^{m-1} p'_{rs}(t)$ for each $r = n+1, \ldots, n+m-1$. But the individual values $p'_{rs}(t)$ for $r = 0, 1, \ldots, n+m-2$ and $r - n \leqslant s < m$ are, subject to these linear restraints, still at our disposal. We shall

make no further assumption about these individual values, except that none are negative and that when $1r - s1 \leqslant 1$, $p'_{rs}(t)$ is positive.

The effect of these assumptions in the case $n = 2$ $m = 3$ is to give the matrix $p'_{rs}(t)$ the following form:

$p'_{00}(t)$	$p'_{01}(t)$	$p'_{02}(t)$	p_1	0	0	0	0 . . . .
$p'_{10}(t)$	$p'_{11}(t)$	$p'_{12}(t)$	p_2	p_2	0	0	0 . . . .
$p'_{20}(t)$	$p'_{21}(t)$	$p'_{22}(t)$	p_1	p_2	p_2	0	0 . . . .
0	$p'_{31}(t)$	$p'_{32}(t)$	p_0	p_1	p_2	p_2	0 . . . .
0	0	p_{-2}	p_{-1}	p_0	p_1	p_2	p_2 . . . .
0	0	0	p_{-2}	p_{-1}	p_0	p_1	p_2 . . . .
0	0	0	0	p_{-2}	p_0	p_1	p_1 . . . .
0	0	0	0	0	p_{-2}	p_{-1}	p_0 . . . .
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.

DIAGRAM 3

subject to the conditions:

(i) that the sum of the elements in each row are unity;

(ii) that the elements in the three central diagonals are all positive, and no elements are negative.

In the general case where m is some positive integer, the equation

$$g(z) = \sum_{\theta=0}^{m+n} p_{m-\theta} z^\theta - z^m = 0 \tag{5.3}$$

will still have just one positive root b_1 less than unity, provided we retain our assumption (3.5) in the form

$$g'(1) = -\sum_{u=-n}^{m} u p_u > 0. \tag{5.4}$$

This assumptions ensures, by a theorem due to Mr. F. G. Foster,[1] that the matrix $p'_{rs}(t)$ is "non-dissipative," and hence that a unique finite non-zero equilibrium distribution will be approached in the limit under the repeated application of the changes embodied in this matrix.

Let the $m + n$ roots of (5.3) be $b_1 b_2 \ldots b_{m+n}$; and let x_s $(s = 0, 1, 2 \ldots)$ denote the equilibrium distribution, which must satisfy the equilibrium equations

$$\left\{ \begin{array}{l} x_s = \sum_{r=0}^{\infty} p'_{rs}(t) x_r \qquad s = 0, 1, 2 \ldots \\ \sum_{s=0}^{\infty} x_s = N \end{array} \right. \tag{5.5}$$

[1] Foster [4].

This set of equations may be subdivided into

$$(5.6) \qquad x_s = \sum_{r=0}^{\infty} p'_{rs}(t)x_r \qquad s = 0, 1, 2 \ldots m-1$$

$$(5.7) \qquad x_s = \sum_{u=-n}^{m} p_u x_{s-u} \qquad s = m, m+1, m+2 \ldots$$

$$(5.8) \qquad \sum_{s=0}^{\infty} x_s = N$$

The solution is known, because of Foster's theorem, to exist: hence there exist coefficients $B_1 \ldots B_{m+n}$ such that

$$(5.9) \qquad x_s = \sum_{k=1}^{m+n} B_k b_k^s \qquad s = 0, 1, 2 \ldots m+n-1$$

It will then follow from (5.3) and (5.7) that

$$(5.10) \qquad x_s = \sum_{k=1}^{m+n} B_k b_k^s \qquad s = m+n, m+n+1, \ldots$$

Amongst those roots whose coefficients in (5.10) are not zero there will be one (at least) whose modulus is not exceeded by that of any other. Let its modulus be b: then for large s, (5.10) will reduce to the form

$$(5.11) \quad x_s = b^{-s}\{B'_1 + B'_2(-1)^s + \sum_{k=3}^{k} B'_k \cos(s\theta_k + \phi_k) + o(1)\}$$

Since no x_s can be negative

$$(5.12) \qquad B'_1 > 0$$

and b itself must be one root of (5.3). But since all the coefficients of non-zero powers of z in the expansion of $z^{-m}g(z)$ are positive, there can then be no other root of modulus b than b itself. Hence (5.11) may be reduced to

$$(5.13) \qquad x_s = b^{-s}\{B'_1 + o(1)\}$$

It follows from (5.8), (5.12) and (5.13) that $|b| < 1$ and hence

$$(5.14) \qquad x_s = b_1^{-s}\{B_1 + o(1)\}$$

where b_1 is the real root lying between 0 and 1. (5.14) expresses the fact that the Pareto curve for the equilibrium distribution is asymptotic to a straight line.

It is always possible to find the coefficients B_k in the exact solution (5.9), (5.10) by finding b_1 and the roots $b_2 \ldots b_m$ of modulus less than b_1 and fitting B_1 to B_k so as to satisfy (5.6).

It is perhaps of some interest to state that by a suitable choice of the elements $p'_{rs}(t)$ in the top left-hand corner of the matrix illustrated in Diagram 3, which were left with arbitrary values, it is always possible to arrange that all the terms except

the first vanish in the expansion for x_s so that in this case Pareto's law is exactly obeyed throughout the whole income scale as in the example of Section 3. A variety of such suitable choices is available, but the result has so little practical relevance that it may be left to the curious reader to verify it if he so wishes.

It is now convenient to relax our assumption (5.2) so that the distribution $p_{ru}(t)$ need only conform to the standard form p_u for high incomes. We replace (5.2) by

$$(5.15)\quad p_{ru}(t) = p_u \text{ defined for } u = -n, 1-n, \ldots, m \text{ if } u + r \geqslant m + w$$

where w is a non-negative integer

$$\sum_{u=-n}^{m} p_u = 1 \text{ and no } p_u \text{ is negative.}$$

The $p_{ru}(t)$ thus freed from the restriction (5.3) are those for which $m - r \leqslant u \leqslant m + w - r$ and $-n \leqslant u \leqslant m$, and these may be left free, apart from the usual requirements that no $p_{ru}(t)$ is negative, all $p_{r1}(t)$, $p_{r0}(t)$ and $p_{r-1}(t)$ are positive and the survival assumption (5.2).

In the case $n = 1$ $m = 2$ $w = 2$, the effect of these assumptions on the appearance of the matrix $p'_{rs}(t)$ is shown below.

$r =$	0	1	2	3	4	5	6
$s =$							
0	$p'_{00}(t)$	$p'_{01}(t)$	$p'_{02}(t)$	0	0	0	0
1	$p'_{10}(t)$	$p'_{11}(t)$	$p'_{12}(t)$	$p'_{13}(t)$	0	0	0
2	0	$p'_{21}(t)$	$p'_{22}(t)$	$p'_{23}(t)$	p_2	0	0
3	0	0	$p'_{32}(t)$	$p'_{33}(t)$	p_1	p_2	0
4	0	0	0	$p'_{43}(t)$	p_0	p_1	p_2
5	0	0	0	0	p_{-1}	p_0	p_1
6	0	0	0	0	0	p_{-1}	p_0

DIAGRAM 4

The reader may compare this diagram with the figures of Table II.

The effect of the change in our model on the solution is in principle not very great. As before, we find $b_1 \ldots b_m$ those m roots of (5.3) which have modulus less than unity and we try solutions of the form (5.9) for $x_w x_{w+1} \ldots$

But we can no longer expect $x_0 x_1 \ldots x_{w-1}$ to conform to the rule (5.9), and we need w more equations to determine these w further unknowns. These equations are provided by extending the equations (5.6) to cover $s = 0, 1, \ldots, m + w - 1$.

Subject to these modifications, the solution is exactly the same as before, and again the Pareto curve for high incomes must be asymptotic to a straight line.

The extension of these results to the case where there are two tails in a generalised form of the example discussed in Section 4 above involves no difficulty in principle.

§ 6. A Model Making Allowance for Some Effects of Age- and Occupation-Structure

An obvious objection to a theory based on the constancy over time of the movement matrices $p_{rs}(t)$ is the fact that age and death play such an important part in determining the changes in an income. In this section we shall modify our assumptions so as to go some way towards meeting this difficulty.

Our method will be to suppose that our population is divided between C "colonies," and that income-receivers can migrate from one colony to another, the prospects of change of income varying from colony to colony. When we wish to discuss the effect of age on income distribution, the "colonies" will represent age-groups: if the width of the age-groups exceeds one "year," then an income attached to one individual may either remain in that age-group or pass on to the next age-group above, or if the individual dies, pass with an appropriate reduction in size to the age-group containing the heir.

But the method could be used also to study the effects on income distribution of the tendency for families to remain in the same occupation: for this purpose we would make the "colonies" represent occupations. As in occupations, the income prospects in some colonies would be better than in others: most incomes would remain in one colony, but there would again be some movement between colonies.

We shall find that provided within each colony the $p_{ru}(t)$ functions have a form independent of the income range, for all large incomes the asymptotic approach of the Pareto curve to a straight line will be preserved under these far more general assumptions.

We now set down formally the notation for our model modified to include colonies.

Let $$ {}_{cd}p'_{rs}(t) = {}_{cd}p_{rs-r}(t) $$

denote the proportion of the incomes in range R_r in colony c in year t which move into range R_s in colony d in year $t+1$.

If ${}_cx_r(t)$ denotes the number of incomes in range R_r in colony c in year t, then by definition

$$ {}_dx_s(t+1) = \sum_{c=1}^{C} \sum_{r=0}^{\infty} {}_{cd}p'_{rs}(t)\,{}_cx_s(t) \tag{6.1} $$

and if an equilibrium distribution ${}_dx_s$ exists it must satisfy the condition

$$(6.2) \qquad {}_dx_s = \sum_{c=1}^{C} \sum_{r=0}^{\infty} {}_{cd}p'_{rs}(t)\,{}_cx_r$$

for every $d = 1, 2, \ldots C$ and $s = 0, 1, 2, \ldots$

The assumptions for our model can now be set down in a form closely analogous to those of the simpler model of Section 5, We assume

$$(6.3) \qquad {}_{cd}p_{rs}(t) = {}_{cd}p'_{r,\,r+s}(t) = 0$$

when $s > m_d$ or $s < -n_d$

where m_d and n_d are positive integers $d = 1, 2, \ldots C$

$$(6.4) \qquad {}_{cd}p_{ru}(t) = {}_{cd}p'_{r,\,r+u}(t) = {}_{cd}p_u \geqslant 0$$

if $s = r + u \geqslant m_d + w_d$

and $m_d \geqslant u \geqslant -n_d$

where the w_d are non-negative integers for $d = 1, 2, \ldots C$, and the ${}_{cd}p_u$ are constants satisfying for each $c = 1, 2, \ldots C$, the survival condition

$$(6.5) \qquad \sum_{d=1}^{c} \sum_{u=-n_d}^{m_d} {}_{cd}p_u = 1$$

It is convenient at this stage to introduce the notion of the accessibility of one income range R_s in one colony C_d from the income range R_r in colony C_c.

Range R_s in C_d will be called accessible in one step from range R_r in C_c if ${}_{cd}p'_{rs}(t)$ is positive : it will be called accessible in two steps from R_r in C_c if it is accessible in one step from any range in any colony which itself is accessible from R_r in C_c in one step. In general, the definition may be extended one by one to any larger number of steps, by always defining R_s in C_d to be accessible in n steps from R_r in C_c, if it is accessible in one step from any range in any colony, which itself is accessible from R_r in C_c in $(n-1)$ steps.

Finally, R_s in C_d will be termed accessible from R_r in C_c if for any n it is thus accessible in n steps.

We now make the further assumption

(6.6) Each range in any colony is accessible from each range in every colony.

The purpose of this assumption is to ensure that the equilibrium income distribution is unique.

The survival postulate now takes the form

$$(6.7) \qquad \sum_{d=1}^{c} \sum_{u=-n_d}^{m_d} {}_{cd}p_{ru}(t) = 1$$

and we require one further postulate in order to rule out solutions involving periodic fluctuations from one distribution to another. This postulate may take the form that

(6.8) There is some pair of ranges R_s in C_d and R_r in C_c and some integer n such that R_s in C_d is accessible from R_r in C_c both in n steps and in $(n + i)$ steps.

The effect of these assumptions on the matrices ${}_{cd}p'_{rs}(t)$ may be illustrated by a numerical example with $C = 3$. In this example, the three colonies represent the young, middle-age and old-age groups 20–35, 35–50 and 50–65 years, and the unit of time during which the matrix ${}_{cd}p'_{rs}(t)$ operates once is taken as fifteen calendar years. It is supposed that all the young survive to middle-age, but half the middle-aged die and their incomes pass with suitable reduction to young heirs in the next period, while the other half reappear as the old in the next period, then to die and transmit their incomes to the young in the following period.

We arrange $m_1 = 0 \quad m_2 = 1 \quad m_3 = 1 \quad C = 3$

$w_1 = 1 \quad w_2 = 0 \quad w_3 = 0$

and choose the following nine matrices ${}_{cd}p'_{rs}(t)$ for $c = 1, 2, 3$ and $d = 1, 2, 3$.

We put identically equal to zero those five of the matrices for which either $c = d$ or $c = 1$ and $d = 3$, or $c = 3$ and $d = 2$. The other four matrices we choose as follows :

$$
{}_{12}p'_{rs}(t) = \begin{matrix} 0{\cdot}1 & 0{\cdot}9 & 0 & 0 & \text{etc.} \\ 0 & 0{\cdot}1 & 0{\cdot}9 & 0 & \text{etc.} \\ 0 & 0 & 0{\cdot}1 & 0{\cdot}9 & \text{etc.} \\ 0 & 0 & 0 & 0{\cdot}1 & \text{etc.} \\ & & \text{etc.} & & \end{matrix}
\qquad
{}_{13}p'_{rs}(t) = \begin{matrix} 0{\cdot}1 & 0{\cdot}4 & 0 & 0 & \text{etc.} \\ 0 & 0{\cdot}1 & 0{\cdot}4 & 0 & \text{etc.} \\ 0 & 0 & 0{\cdot}1 & 0{\cdot}4 & \text{etc.} \\ 0 & 0 & 0 & 0{\cdot}1 & \text{etc.} \\ & & \text{etc.} & & \end{matrix}
$$

$$
{}_{21}p'_{rs} = \begin{matrix} 0{\cdot}5 & 0 & 0 & 0 & \text{etc.} \\ 0{\cdot}4 & 0{\cdot}1 & 0 & 0 & \text{etc.} \\ 0{\cdot}2 & 0{\cdot}2 & 0{\cdot}1 & 0 & \text{etc.} \\ 0 & 0{\cdot}2 & 0{\cdot}2 & 0{\cdot}1 & \text{etc.} \\ 0 & 0 & 0{\cdot}2 & 0{\cdot}2 & \text{etc.} \\ & & \text{etc.} & & \end{matrix}
\qquad
{}_{31}p'_{rs} = \begin{matrix} 1 & 0 & 0 & 0 & 0 & \text{etc.} \\ 0{\cdot}9 & 0{\cdot}1 & 0 & 0 & 0 & \text{etc.} \\ 0{\cdot}8 & 0{\cdot}1 & 0{\cdot}1 & 0 & 0 & \text{etc.} \\ 0{\cdot}5 & 0{\cdot}3 & 0{\cdot}1 & 0{\cdot}1 & 0 & \text{etc.} \\ 0 & 0{\cdot}5 & 0{\cdot}3 & 0{\cdot}1 & 0{\cdot}1 & \text{etc.} \\ 0 & 0 & 0{\cdot}5 & 0{\cdot}3 & 0{\cdot}1 & \text{etc.} \\ & & \text{etc.} & & & \end{matrix}
$$

DIAGRAM 5

It may be noted that R_0 in C_1 is accessible from R_0 in C_2 both in one step and in two steps. Thus the matrices satisfy the postulate (6.8).

In any generalised model of this type we shall have C sets of equilibrium equations to be satisfied by the equilibrium distributions ${}_dx_s$, namely

$$
(6.9) \qquad {}_dx_s = \sum_{c=1}^{c} \sum_{r=0}^{\infty} {}_{cd}p'_{rs}(t)\,{}_cx_r \qquad d = 1, 2, \ldots C
$$

For $s > m_d + w_d$, these conditions become

$$(6.10) \qquad {}_dx_s = \sum_{c=1}^{C} \sum_{u=-n_d}^{m_d} {}_{cd}p_u \, {}_cx_{s-u} \qquad d = 1, 2, \ldots C$$

We are thus led to investigate the C simultaneous equations

$$(6.11) \qquad A_d = \sum_{c=1}^{C} \sum_{u=-n_d}^{m_d} {}_{cd}p_u A_c z^{-u} \qquad d = 1, 2, \ldots C$$

which we may write again as

$$(6.12) \qquad \sum_{c=1}^{C} P_{cd}(z) A_c = 0 \qquad d = 1, 2, \ldots C$$

where

$$(6.13) \qquad P_{cd}(z) = \left\{ \sum_{u=-n_d}^{m_d} {}_{cd}p_u z^{-u} - 1 \right\} \text{ if } c = d$$

$$= \sum_{u=-n_d}^{m_d} {}_{cd}p_u z^{-u} \qquad \text{if } C \neq d$$

Elimination of the coefficients A_c leads to

$$(6.14) \qquad \text{Det.}|P_{cd}(z)| = G(z), \text{ say} = 0$$

This function $G(z)$ can be expressed in the form

$$(6.15) \qquad G(z) = \sum_{u=-n}^{m} p_u z^{-u} \qquad m = \sum_{c=1}^{C} m_c \quad n = \sum_{c=1}^{C} n_c$$

and plays a similar role in the theory to the function $g(z)$ in earlier sections. In particular, if we postulate

$$(6.16) \qquad G'(1) = -\sum_{u=-n}^{m} u p_u > 0$$

it can be proved by an application of Foster's theorem that the process is non-dissipative and that a unique equilibrium distribution exists.

We can again prove by the methods of Section 5 that for large s, where x_s is the equilibrium distribution

$$(6.17) \qquad x_s = b_1^s\{B_1 + o(1)\}$$

where b_1 is a real positive root of (6.14).

Thus again the Pareto curve is asymptotic to a straight line in the region of high incomes.

The procedure for finding an exact solution is the following. First find b_1 the largest real positive root and $b_2 \ldots b_m$ the roots of lesser modulus. Let B_{ce} denote the co-factor of $P_{c1}(b_e)$ in the determinant $G(z)$. Then

$$(6.18) \qquad \sum_{c=1}^{C} B_{ce} P_{c1}(b_e) = G(b_e) = 0 \qquad e = 1, 2 \ldots m$$

and (6.12) will clearly be satisfied, provided

$$(6.19) \quad A_c = \sum_{e=1}^{m} B_{ce}\lambda_e, \text{ where } \lambda_e \text{ are any numbers.}$$

We have still to determine not only the m values λ_e but also those values ${}_dx_s$ for which $s < w_d$: the number of these is given by

$$(6.20) \quad w = \sum_{d=1}^{c} w_d$$

We have thus $(w + m)$ unknowns to find. To discover them we have the $w + m$ equations determining the equilibrium of those ${}_cx_s$ for which $s < m_c + w_c$: namely (6.2) for these values of c and s. These equations are not linearly independent, and only determine the ratios between the $w + m$ unknowns. Apart from a scale factor, this is sufficient to determine all the ${}_cx_s$, and the scale factor can then be found if we know the original total population.

It can be proved exactly as before that the distribution

$$(6.21) \quad x_s = \sum_{c=1}^{C} {}_cx_s$$

so determined is the unique equilibrium distribution and that the term involving b_1^s will dominate the whole value of x_s for sufficiently large s. Thus the Pareto curve for sufficiently large incomes will preserve its property of being asymptotic to a straight line, despite the greater generalisation introduced in this model.

As in simpler models, we could remove the restriction that there is a minimum income range R_0 and elaborate the model so as to secure an equilibrium distribution with two Pareto tails, one for the poor and one for the rich. The exposition is tedious, and since our conclusions would not be substantially affected, this refinement is eschewed.

§ 7. Numerical Example Involving the Effect of Age-structure on Income Distribution

The general method of solution indicated in the last section can be made much clearer by applying it to the numerical example described above in Diagram 4.

In this example, $C = 3$, $m = 2$, and the determinant of $P_{cd}(z)$ is

$$(7.1) \quad G(z) = \begin{vmatrix} -1 & 0{\cdot}9z^{-1} + 0{\cdot}1 & 0 \\ 0{\cdot}1 + 0{\cdot}2z + 0{\cdot}2z^2 & -1 & 0{\cdot}4z^{-1} + 0{\cdot}1 \\ 0{\cdot}1 + 0{\cdot}1z + 0{\cdot}3z^2 + 0{\cdot}5z^3 & 0 & -1 \end{vmatrix}$$

$$= 0{\cdot}36z^{-2} + 0{\cdot}139z^{-1} - 0{\cdot}688 + 0{\cdot}420z + 0{\cdot}088z^2 + 0{\cdot}005z^3$$

By differentiation

$$G'(1) = 0{\cdot}4 > 0 \tag{7.2}$$

so that, since $m = 2$, the equation $G(z) = 0$ must have just two roots of modulus less than unity. These may be found by Horner's method

$$\text{as } b_1 = 0{\cdot}4563136 \qquad b_2 = -0{\cdot}1453788 \tag{7.3}$$

The six co-factors B_{cs} of $p_{c1}(b_e)$ in the determinants $D(b_e)$ are

$$B_{1e} = 1 \quad B_{2e} = 0{\cdot}9b_e^{-1} + 0{\cdot}1 \quad B_{3e} = (0{\cdot}9b_e^{-1} + 0{\cdot}1)(0{\cdot}4b_e^{-1} + 0{\cdot}1) \quad e = 1, 2 \tag{7.4}$$

and their numerical values are

$$\begin{aligned} &B_{11} = 1 \quad B_{21} = 2{\cdot}072\ 327 \quad B_{31} = 2{\cdot}023\ 814 \\ &B_{12} = 1 \quad B_{22} = -6{\cdot}090\ 724 \quad B_{32} = -6{\cdot}310\ 8 \end{aligned} \tag{7.5}$$

We now put

$$\begin{cases} {}_1x_s = \lambda_1 b_1^{\,s} + \lambda_2 b_2^{\,s} & \text{for } s = 1, 2, 3 \ldots \\ {}_2x_s = \lambda_1 B_{21} b_1^{\,s} + \lambda_2 B_{22} b_2^{\,s} & \text{for } s = 0, 1, 2 \ldots \\ {}_3x_s = \lambda_1 B_{31} b_1^{\,s} + \lambda_2 B_{32} b_2^{\,s} & \text{for } s = 0, 1, 2 \ldots \end{cases} \tag{7.6}$$

and we still have to determine λ_1, λ_2 and ${}_1x_0$.

We have available for this purpose the three equations

$$\begin{cases} {}_1x_0 = 0{\cdot}5{}_2x_0 + 0{\cdot}4{}_2x_1 + 0{\cdot}2{}_2x_2 + {}_3x_0 + 0{\cdot}9{}_3x_1 \\ \qquad\qquad + 0{\cdot}8{}_3x_2 + 0{\cdot}5{}_3x_3 \\ {}_2x_0 = 0{\cdot}1{}_1x_0 \\ {}_3x_0 = 0{\cdot}1{}_2x_0 \end{cases} \tag{7.7}$$

Fortunately, any two equations contain all the fresh information provided by the three, and we accordingly take the two simple ones and rewrite them as

$$\begin{cases} \lambda_1 B_{21} + \lambda_2 B_{22} = 0{\cdot}1{}_1x_0 \\ \lambda_1 B_{31} + \lambda_2 B_{32} = 0{\cdot}1(\lambda_1 B_{21} + \lambda_{22} B_{22}) \end{cases} \tag{7.8}$$

If we leave aside the scale factor we may arbitrarily put $\lambda_1 = 10{,}000$ and, substituting our numerical values for $B_{21}B_{22}B_{31}$ and B_{32}, we then find from the second equation that

$$\lambda_2 = 3185{\cdot}939 \tag{7.9}$$

and then from the first equation that

$${}_1x_0 = 13185{\cdot}939 \tag{7.10}$$

Using our equations (7·6) for the other ${}_cx_s$ we may now obtain the numerical values of as many ${}_cx_s$ as we please. Here are the first few values, with λ_1 put equal to 10000 :

TABLE III

	Young.	Middle-aged.	Old.	Total.	Income range.
S	${}_1X_s$	${}_2X_s$	${}_3X_s$		
0	13,186	1,319	132	14,637	£125– £200
1	4,100	12,277	1,755	18,132	£200– £316
2	2,150	3,995	5,301	11,356	£316– £500
3	940	2,028	1·765	4,734	£500– £800
4	435	890	901	2,225	£800–£1250
5	198	411	397	1,006	£1250–£2000
6	90	187	183	460	£2000–£3160
7 and over	75	157	153	385	£3160–
TOTAL :	21,174	21,174	10,687	52,935	

The income scale put in on the extreme right assumes that the minimum income is £125 and that the upper limit of each income range is nearly 60% greater than the lower limit.

It will be noted that although the equilibrium distributions of incomes for young, middle-aged and old are very different for small incomes, yet already at income levels of £1,250 and over each is rapidly approaching a Pareto distribution with

$$(7.11) \qquad a = -\frac{\log_{10} b_1}{\log_{10} 1{\cdot}58} = -5 \log_{10} b_1 = 1{\cdot}7041$$

This is well brought out by Chart 1 which shows for each age group and for all ages the following cumulative totals plotted on the double logarithmic paper.

TABLE IV

Income level.	Number of incomes exceeding this level.			
	Young.	Middle-aged.	Old.	Total.
£125 . . .	21,174	21,174	10,587	52,935
£200 . . .	7,988	19,855	10,455	38,298
£316 . . .	3,888	7,578	8,700	20,166
£500 . . .	1,738	3,674	3,399	8,810
£800 . . .	798	1,645	1,634	4,076
£1250 . . .	363	755	733	1,851
£2000 . . .	165	344	336	845
£3160 . . .	75	157	153	385

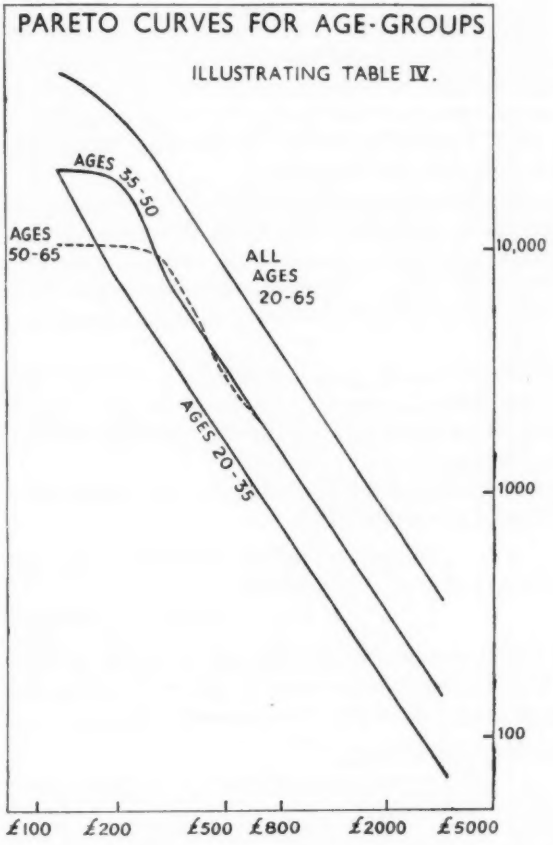
We may read off from the chart that the median incomes in the three age-groups differ considerably: they are £175, £280 and £410 approximately. Yet for incomes over £500 it is clear from Chart 1 that the *proportionate* distributions are almost identical for the three age-groups.[1]

[1] For similar charts of actual distributions see Lydall [5].

§ 8. Numerical Example Involving the Effect of Occupational Structure on Income Distribution

In our last model we made the assumption that every income range in every colony was accessible from every other. If we relax this assumption to state that within a certain group G of

Chart I



pairs (rc) every R_r in every colony c is accessible from every other, then our results will still hold, provided that the initial distribution was confined to this group.

If we maintain our other assumptions, then the effective new possibility introduced by this relaxation is the inclusion of colonies where there is an upper limit to the possible income.

This is useful when our colonies represent groups of occupations. Thus, let our society be composed of persons classified according to their main sources of income into :

1. Unskilled labour.
2. Semi-skilled work; skilled work and clerical.
3. Salaries and professional.
4. Profits, land, property.

Then we might assume that there was an effective ceiling on the incomes of classes 1 and 2, and 3. If for simplicity we ignore the complication of age considered in our last example and take broad income groups so that group R_r extends from 2^{r-3} thousand pounds to 2^{r-2} we might set up the following model within our relaxed assumption (see Diagram 6).

It is assumed that no one can obtain incomes higher than £500 in occupation 1, or higher than £1000 in occupation 2. It will be seen that ${}_{33}p'_{rs}$, ${}_{34}p'_{rs}$, ${}_{43}p'_{rs}$ and ${}_{44}p'_{rs}$ assume repetitive forms when r becomes large : we might therefore expect to find the Pareto curves for occupations 3 and 4 to be asymptotic to straight lines.

It will be noted that ${}_{43}p'_{r2} > 0$ for all $r > 0$ so that (6.3) is not satisfied for finite n_3 when $c = 4$ $d = 3$ $s = 2$. Nevertheless, a solution can be found by the following method, which is similar to that of Section 7.

The matrix $P_{rs}(z)$ for this example is only concerned with the values 3 and 4 of r and s. It is

$$(8.1)\quad P_{rs}(z) = \begin{vmatrix} 0{\cdot}020z^{-1} - 0{\cdot}218 & 0{\cdot}000139z^{-1} + 0{\cdot}01786 \\ +0{\cdot}180z & \\ 0 & 0{\cdot}030z^{-1} - 0{\cdot}115 + 0{\cdot}075z \end{vmatrix}$$

The survival condition (6·5) is not, however, satisfied, since 1% of those in each income group $s > 3$, in C_4, escape each year into income group R_2 of C_3. Consequently, writing

$$(8.2)\quad \begin{aligned} G(z) &= \mathrm{Det}|P_{rs}(z)| \\ &= 0{\cdot}00060z^{-2} + 0{\cdot}0088z^{-1} + 0{\cdot}03197 - 0{\cdot}03705z \\ &\quad + 0{\cdot}01350z^2 \end{aligned}$$

we find that $G(1) \neq 0$ and that the non-dissipative condition (6.15) is not satisfied.

Nevertheless, two real positive roots of $G(z) = 0$ of modulus less than unity can be found and the usual method of solution proves adequate. The two roots are

$$(8.3)\qquad b_1 = 0{\cdot}333\ 333 \qquad b_2 = 0{\cdot}100\ 000$$

	${}_{11}P'_{rs}$		${}_{12}P'_{rs}$		
$r=$ / $s=$	0	1	0	1	2
0	0·856	0·144	0	0	0
1	0·250	0·593	0·057	0·110	0

	${}_{21}P'_{rs}$		${}_{22}P'_{rs}$			${}_{23}P'_{rs}$				${}_{24}P'_{rs}$			
$r=$ / $s=$	1	2	0	1	2	0	1	2	2	0	1	2	2
0	0·050	0·100	0·750	0·100	0	0	0	0	0	0	0	0	0
1	0·050	0·220	0·075	0·640	0·025	0	0·010	0	0	0	0	0	0
2	0	0·075	0	0·125	0·500	0	0	0·250	0	0	0	0·050	

	${}_{31}P'_{rs}$				${}_{32}P'_{rs}$						
$r=$ / $s=$	0	1	2	2	0	1	2	3	4	5	6
0	0·482	0	0	0	0·132	0·1875	0	0	0	0	0
1	0·02657	0·075	0	0	0·025	0·500	0·250	0	0	0	0
2	0	0	0·05	0	0·00486	0·055	0·79256	0·020	0	0	0
3	—	—	—	—	0	0	0·180	0·782	0·020	0	0
4	—	—	—	—	0	0	0	0·180	0·782	0·020	0
5	—	—	—	—	0	0	0	0	01·80	0·782	0·020
6	—	—	—	—	0	0	0	0	0	0·180	0·782
						etc.			etc.		

	${}_{41}P'_{rs}$						
$r=$ / $s=$	0	1	2	3	4	5	6
0	0·100	0·120	0	0	0	0	0
1	0·0025	0·050	0·07075	0	0	0	0
2	0	0·010	0·060	0·000139	0	0	0
3	0	0	0	0·01786	0·000139	0	0
4	0	0	0	0	0·01786	0·000139	0
5	0	0	0	0	0	0·01786	0·000139
				etc.			

	${}_{42}P'_{rs}$			
$r=$ / $s=$	0	1	2	>2
0	0·500	0·050	0	0
1	0·050	0·300	0·150	0
2	0	0·0081	0·010	0
3	0	0	0·010	0
4	0	0	0·010	0
	0	0	0·010	0

	${}_{43}P'_{rs}$						
$r=$ / $s=$	0	1	2	3	4	5	6
0	0·250	0·200	0	0	0	0	0
1	0·100	0·370	0·030	0	0	0	0
2	0	0·010	0·8519	0·030	0	0	
3	0	0	0·075	0·885	0·030	0	0
4	0	0	0	0·075	0·885	0·030	0
5	0	0	0	0	0·075	0·885	0·030
		etc.		etc.			etc.

${}_{13}P'_{rs} = {}_{14}P'_{rs} = 0$ for all $r.s.$
${}_{31}P'_{rs} = {}_{41}P'_{rs} = {}_{42}P'_{rs} = 0$ for all $r.s.$

DIAGRAM 6

and we calculate

$$(8.4)\qquad \begin{aligned} B_{3e} &= 0{\cdot}30b_e^{-1} - 0{\cdot}115 + 0{\cdot}075b_e \\ B_{4e} &= -\,0{\cdot}000139b_e^{-1} - 0{\cdot}01786 \qquad e = 1, 2 \end{aligned}$$

to give

$$B_{31} = 0 \quad B_{32} = 0{\cdot}1925 \quad B_{41} = -\,0{\cdot}18278 \quad B_{42} = -\,0{\cdot}01925$$

Hence we are led to try solutions of the form

$$(8.5)\qquad \begin{aligned} {}_3x_s &= 0{\cdot}1925\lambda_2 10^{-s} \qquad s = 2, 3, 4 \ldots \\ {}_4x_s &= -\,0{\cdot}18278\lambda_1 3^{-s} - 0{\cdot}01925\lambda_2 10^{-s} \qquad s = 3, 4, 5 \ldots \end{aligned}$$

It will slightly simplify the algebra to fix the scale arbitrarily at this stage by choosing λ_2 so that

$$(8.6)\qquad \begin{aligned} {}_3x_s &= 10^{8-s} \qquad\qquad s = 2, 3, 4 \ldots \\ {}_4x_s &= \lambda'_1 3^{-s} - 10^{7-s} \qquad s = 3, 4 \ldots \end{aligned}$$

λ'_1 is still undetermined and we also have still to find ${}_4x_0$, ${}_4x_1$, ${}_3x_0$, ${}_3x_1$, ${}_2x_0$, ${}_2x_1$, ${}_2x_2$, ${}_1x_0$ and ${}_1x_1$.

To find these ten constants we have the eleven equations associated with the equilibrium of ${}_1x_0$, ${}_1x_1$, ${}_2x_0$, ${}_2x_1$, ${}_2x_2$, ${}_3x_0$, ${}_3x_1$, ${}_3x_2$, ${}_4x_0$, ${}_4x_1$ and ${}_4x_2$, namely

$$(8.6)\qquad \begin{cases} {}_1x_0 = 0{\cdot}856\,{}_1x_0 + 0{\cdot}250\,{}_1x_1 + 0{\cdot}050\,{}_2x_0 + 0{\cdot}050\,{}_0x_1 \\ {}_1x_1 = 0{\cdot}144\,{}_1x_0 + 0{\cdot}593\,{}_1x_1 + 0{\cdot}100\,{}_2x_0 \\ \qquad\qquad + 0{\cdot}200\,{}_2x_1 + 0{\cdot}075\,{}_2x_2 \\ \qquad \text{(seven equations omitted)} \\ {}_4x_1 = 0{\cdot}120\,{}_3x_0 + 0{\cdot}050\,{}_3x_1 + 10^4 + 0{\cdot}200\,{}_4x_0 \\ \qquad\qquad + 0{\cdot}370\,{}_4x_1 + 0{\cdot}010\{\lambda'_1 3^{-2} - 10^5\} \\ \lambda' 3^{-2} - 10^5 = 0{\cdot}7075\,{}_3x_1 + 6000 + 0{\cdot}030\,{}_4x_1 \\ \qquad + 0{\cdot}0852\{\lambda'_1 3^{-2} - 10^5\} + 0{\cdot}075\{\lambda'_1 3^{-3} - 10^4\} \end{cases}$$

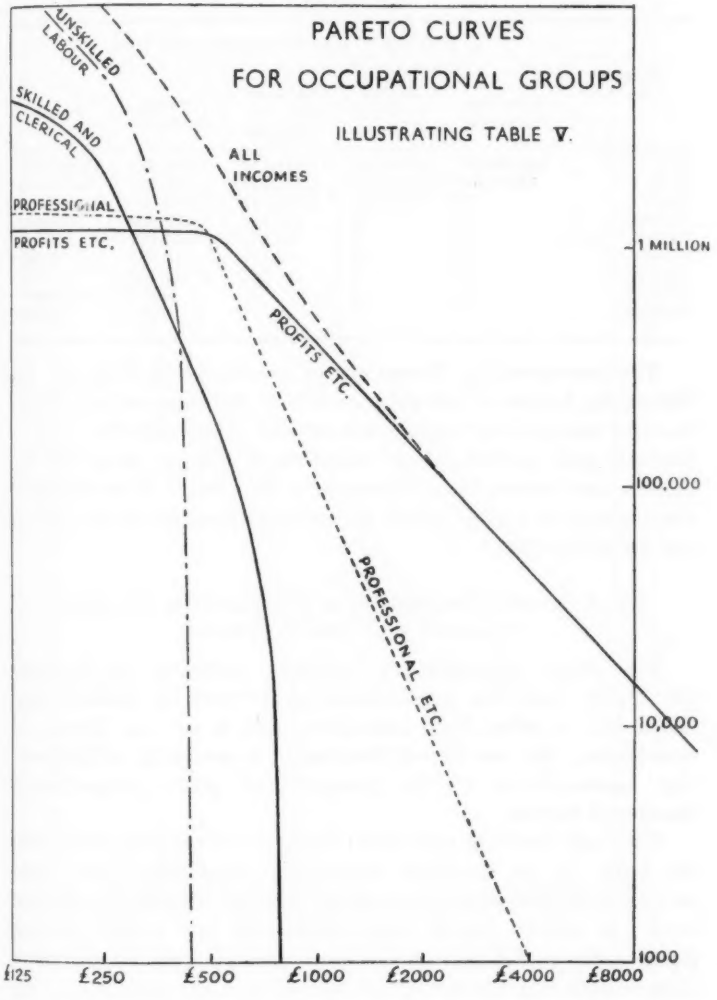
Only ten of these equations provide independent information: any one is implied by the other ten. The solution of ten simultaneous equations is no mean undertaking, but in this example the solution can be found as

$$(8.7)\qquad \begin{cases} \lambda'_1 = 7{\cdot}29 \,.\, 10^6 & {}_1x_0 = 10^7 \\ {}_1x_1 = 5 \,.\, 10^6 & {}_2x_0 = 2{\cdot}10^6 \\ {}_2x_1 = 1{\cdot}8 \,.\, 10^6 & {}_2x_2 = 2.10^5 \\ {}_3x_0 = 2.10^4 & {}_3x_1 = 2{\cdot}10^5 \\ {}_4x_0 = 10^4 & {}_4x_1 = 5{\cdot}10^4 \end{cases}$$

The values of ${}_3x_s$ and ${}_4x_s$ for $s > 1$ may now be found from the equations

$$(8.8)\qquad \begin{aligned} {}_3x_s &= 10^{3-s} \\ {}_4x_s &= 3^{6-s}10^4 - 10^{7-s} \end{aligned}$$

CHART II


PARETO CURVES
FOR OCCUPATIONAL GROUPS
ILLUSTRATING TABLE V.
UNSKILLED LABOUR
SKILLED AND CLERICAL
PROFESSIONAL
PROFITS ETC.
ALL INCOMES
PROFITS ETC.
PROFESSIONAL ETC.
1 MILLION
100,000
10,000
1000
£125
£250
£500
£1000
£2000
£4000
£8000

From the complete set of $_{\alpha}x$, thus obtained, it is a quick matter to compile the following table showing for each occupation the number with incomes exceeding various levels.

TABLE V

Income level.	Number of incomes exceeding this level.				
	Unskilled labourers.	Skilled workers and clerical.	Salaried and professional.	Profits, land, etc.	Total.
£125 . .	15,000,000	4,000,000	1,331,111	1,163,889	21,495,000
£250 . .	5,000,000	2,000,000	1,311,111	1,153,889	9,465,000
£500 . .	0	200,000	1,111,111	1,103,889	2,415,000
£1,000 . .	0	0	111,111	393,889	505,000
£2,000 . .	0	0	11,111	133,889	145,000
£4,000 . .	0	0	1,111	44,889	46,000
£8,000 . .	0	0	111	14,989	15,100
£16,000 .	0	0	11	4,999	5,010
£32,000 .	0	0	1	1,667	1,668

The corresponding Pareto curves are shown in Chart 2. An interesting feature of this solution is that the slopes of the Pareto lines for occupations 3 and 4 are not the same, that for the professional and salaried classes being much steeper than that for those whose income came from profits, land, etc. It is the latter distribution, of course, which determines the slope of the Pareto line for all incomes.[1]

§ 9. A Model Generating a Distribution in which Pareto's Law is not Obeyed

The above examples are probably sufficient to illustrate the theory that the approximate observance of Pareto's law which has so often been remarked upon is not an illusion or coincidence, but has its explanation in a similarity at different high income-levels of the prospects of given proportionate changes of income.

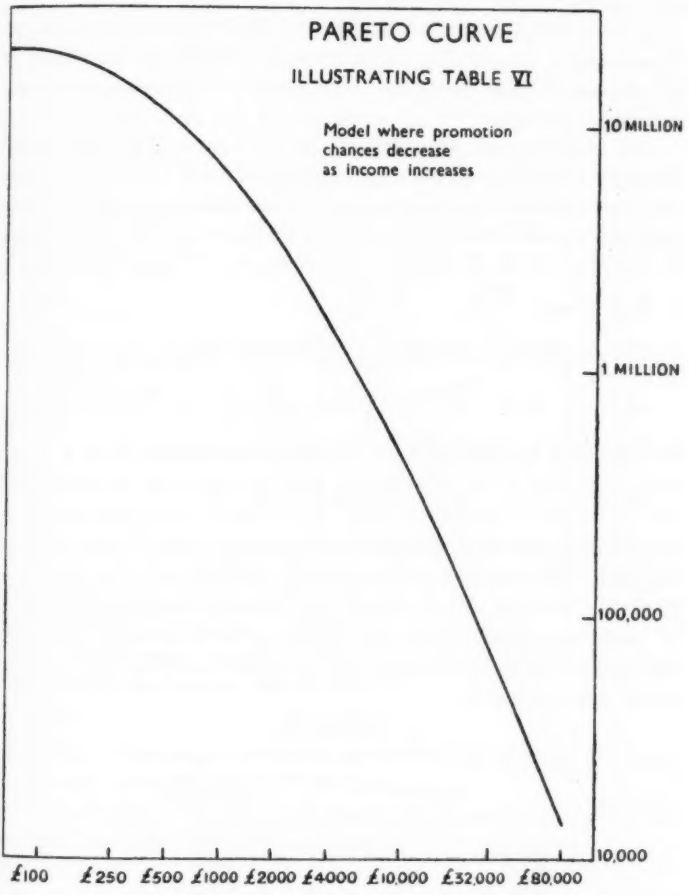
They can do little more than illustrate the theory, since they are built on the artificial simplifying assumption that these prospects of change remain constant through time at each income level. It will be readily appreciated that any model catering for prospects which are not constant through time is much more complicated and the results obtainable are far less clear: the investigation of such models must form the subject of another article than this. The importance of such change in prospects has already been hinted at in the suggestion that changes in the

[1] For similar charts of actual distributions see Lydall [5].

income distribution affect the influence described by the matrices $p'_{rs}(t)$ just as much as the influence affect the incomes.

Another gap in our discussion so far has been any consideration

CHART III



of models which do *not* lead to a Pareto distribution. There is a noticeable tendency recently for the Pareto curves of the United Kingdom and other countries to curve very slightly downwards at the tail, and it would be interesting to have a model illustrating how this could come about. The explanation is probably that the prospects of increasing are proportionately less rosy nowadays

for the very large incomes than for the large incomes. This is not necessarily because the owners of vast incomes are any less abstemious and accumulative than their forerunners used to be, but may be because income tax and death duties are now at a level which makes the piling up of huge fortunes a more gradual and less-rewarding undertaking.

A very simple model will suffice to illustrate the effect on the Pareto curve that would result from a progressive worsening of the chance of (say) doubling the income as one considered larger and larger incomes.

We shall suppose that R_0, R_1, R_2 . . . are the income ranges £62 10*s*.–£125, £125–£250, £250–£500, etc., etc. We shall suppose that the chance of going *down* one range is the same in all ranges (except R_0), and is 10%. In R_0 the chance of going *up* one range is 30%, but in R_1 it is only 15%, in R_2 it is 10%, and in general in R_r it is only $\frac{30\%}{r+1}$.

The equilibrium condition for this model is

$$(9.1) \qquad x_r = \frac{0{\cdot}3x_{r-1}}{r} + \left\{0{\cdot}9 - \frac{0{\cdot}3}{r+1}\right\}x_r + 0{\cdot}1x_{r+1}$$

It can easily be checked that the solution is $r = 1, 2$ . . .

$$(9.2) \qquad x_r = \frac{3^r x_0}{r} \quad r = 1, 2, \ldots$$

The cumulative distribution corresponding to $x_0 = 10^6$ is given in Table VI, and the corresponding Pareto curve is shown in Chart 3. As one would expect, the steadily worsening prospects of income-promotion that are found as consideration passes up the income scale are reflected in a continuous downward curvature of the Pareto curve.

TABLE VI

Income.	Number of incomes exceeding x.
x	(Fx) (thousands)
£62 10*s*.	20,085
£125	19,085
£250	16,085
£500	11,585
£1,000	7,085
£2,000	3,710
£4,000	1,685
£8,000	673
£16,000	239
£32,000	76·4
£64,000	22·1
£135,000	5·9

This example has been chosen so as to provide a very simple solution. In general, it will be difficult to obtain the equilibrium solutions in models where the promotion prospects, as reflected in the matrix $p_{ru}(t)$, vary throughout the income scale.

§ 10. A Model Illustrating the Reaction of Changes in the Income Distribution on the Matrix Depicting the Influences Shaping that Distribution

In conclusion, a warning must be given that although the models discussed above throw some light on the reasons why an approximate obedience of Pareto's law is so often found in actual income distributions, they do not throw much light on the mechanism determining the actual values observed for Pareto's α. It is tempting to draw conclusions from the fact that in equilibrium

$$\alpha = \frac{-\log b_1}{\log (1+h)} \tag{10.1}$$

where b_1 is the positive root of the equilibrium equation

$$\sum_{u=-n}^{m} p_u z^{-u} = 1 \tag{10.2}$$

and h is the proportionate width of each income range. One might suppose that one had only to estimate the p_u corresponding to various economic situations in order to deduce the slopes of the Pareto lines in the consequent income distributions. But it would be just as sensible to guess at the consequent income distributions and deduce how much the p_u functions would have to be modified before that equilibrium was reached.

The point may be illustrated by a final model. Suppose that initially the income distribution is

$$x_s = 2^{23-s} \tag{10.3}$$

where R_s is the range $2^{s/2}$ £100 to $2^{s+1/2}$ £100; then the total income will be approximately 2^{25} £100.

Now suppose that the real income of the community is held constant and that the $p_{ru}(t)$ are given by

$$p_{ru}(t) = p_u, \quad r = 1, 2, 3 \ldots$$

$$p_{01}(t) = p_1 \quad p_{00}(t) = 1 - p_1 \tag{10.4}$$

where $p_{-1} = 0{\cdot}3$ $p_0 = 0{\cdot}5$ $p_1 = 0{\cdot}2$ other $p_u = 0$.

The corresponding value of b_1 is 2/3, so that the equilibrium distribution must be

$$x^s = \frac{2^{24}}{3}\left(\frac{2}{3}\right)^s \tag{10.5}$$

which involve a total income of approximately $\frac{2^{24}}{1-\theta}$ £100 where

$$\theta = \frac{\log 2}{\log 9 - \log 4} = 0{\cdot}8547 \tag{10.6}$$

The numerical value of this total income is about $3{\cdot}44 \times 2^{25}$ £100. Thus money income will have to rise in ratio 3.44, so that if total real income is to remain constant, prices must rise in ratio 3.44, so that the real income of those in R_0 will be only about 30% of what it was originally in R_0.

Now suppose that originally an income at the lower end of R_0 represented the subsistence level. Then directly prices tend to rise some policy must be adopted to subsidise those in R_0: let us suppose that prices are subsidised at the expense of prospects of increasing income. More precisely

$$p_{-1} = 0{\cdot}3 + T \quad p_0 = 0{\cdot}5 \quad p_1 = 0{\cdot}2 - T \tag{10.7}$$
$$p_{01}(t) = p_1 p_{00}(t) = 1 - p_1$$

where T is continually adjusted so as to keep prices and total money income stable.

It is intuitively plausible that this policy will lead eventually to an equilibrium distribution.

The corresponding value of b_1 is given by

$$(0{\cdot}3 + T)b_1^2 + 0{\cdot}5b_1 + (0{\cdot}2 - T) = b_1 \tag{10.8}$$

whence since $b_1 \neq 1$

$$b_1 = \frac{0{\cdot}2 - T}{0{\cdot}3 + T} \tag{10.9}$$

The total income will be $\frac{2^{24}}{1-\theta}$ £100

where

$$\theta = \frac{+\log 2}{-2\log b_1},$$

and in order that this should be equal to the initial total income of 2^{25} £100 so as to obviate the need for higher prices we need $\theta = \frac{1}{2}$ and hence $b_1 = \frac{1}{2}$ and hence $T = 0{\cdot}1$.

When we work out the equilibrium distribution we find, of course, that it is simply the initial distribution unchanged. Hence, it is truer, under our extreme simplifying assumptions, that the initial distribution determined the $p_{ru}(t)$ than that the $p_{ru}(t)$ determined the equilibrium distribution.

Had we allowed some increase in total real income, a lower value of T would, of course, have been necessary, and had we allowed for a continuous expansion of real income an altogether

more advanced model with a shifting $p_{ru}(t)$ function for low values of r would have been required.

These illustrations remind one of the impossibility of drawing any simple conclusions about the effect on Pareto's α of various redistributive policies by *merely* considering the effects of these policies on the functions $p_{ru}(t)$ representing the prospects of increase of income.

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CHOICE IN PSYCHOLOGY AND AS ECONOMIC ASSUMPTION

I

ECONOMISTS cannot be expected to show the same depth and rigour in their treatment of choice as psychologists. For to economists, choice need be no more than a convenient assumption of method; whereas to psychologists it must be of the essence. Economists are, however, to-day freely using the term " choice "; so that in the interests at once of consistency and common sense, it is desirable that the usages of economists should at least not be at odds with the more agreed findings of psychology. How far this is so is the subject of this inquiry.

It has, of course, been suggested by the recent swing among economists to the more subjective approach involved in " choice." This has been worked out in the preference analysis. As a method for first-year students it has not yet proved its superiority over the objective utility method. Beginners seem to gain confidence from a measurable foundation of " usefulness." But in more advanced work the new approach has certainly widened our view, and given us closer contacts with our actual internal experiences.

There are hints of the swing in Marshall himself. With him, maximum total utility is accepted as the economic optimum which will naturally, or rationally, prevail. This, stated from the individual side, gives the traditional dogma—" the uniform, constant and uninterrupted effort of every man to better his own condition "; [1] or, at the level of markets, we simply postulate the amounts of a commodity which will be bought at descending prices; or again, in behaviour terms, such a schedule could represent the *actual* demand for the commodity. Each process is guided to the equilibrium of maximum utility by the law of diminishing utility. This law is interpreted quantitatively—*desires* can fairly be taken as adequately represented by *satisfactions* from utilities, and " we assume that the resulting satisfaction corresponds in general fairly well to that which was anticipated when the purchase was made." [2] Marshall, in an interesting footnote, describes the direct measurement of desires or their satisfactions as " impossible if not inconceivable." [2] Some

[1] Adam Smith, *Wealth of Nations*, Vol. I, p. 306 (Everyman).
[2] Marshall, *Principles*, 8th edition, p. 93.

desires are impulsive, many habitual, many even morbid or unhealthy, "and many are based on expectations that are never fulfilled." [1] Satisfactions in turn are often "not common pleasures"—they can conduce to our "beatification." [1] Thus in any case the measurements of the desire and its satisfaction might differ. "But as neither of them is possible, we fall back on the measurement which economics supplies of the motive or moving force to action; and we make it serve, with all its faults, both for the desires which prompt activities and for the satisfactions that result from them." [1] In sum, purchase prices are assumed to measure quantitatively the satisfactions anticipated when the purchase was made, and resulting satisfactions are taken as truly and sufficiently reflected by anticipated satisfactions.

It is characteristic that Marshall insists on the irrationality of many of our actual motives, and this is a fact which psychologists are apt to underline when commenting on the severely logical nature of economic reasoning.[2] But for purposes of method, there is complete common sense in the classical assumptions, so long as one remembers "all the faults" of the economic measure.[3] Pigou follows out Marshall's technique. "The money which a person is prepared to offer for a thing measures directly, not the satisfaction he will get from the thing, but the intensity of his desire for it": [4] (desire at the time of purchase being equivalent to satisfaction *anticipated* then). The terms "anticipated satisfaction" or more concretely "intensity of desire" are certainly preferable to the colourless make-shift "utility" as descriptions of our motives in paying purchase prices. For it is only *after* we have bought that we experience *actual* satisfactions. These latter affect our desires only indirectly and partially through the backward influence of our experience. The "anticipated-satisfaction" or intensity-of-desire approach leads much more easily and truly to the "indifference" or individual preference technique; for we know we judge between competing intensities of *desires*; but the picture of *utilities* of differing quantity presented to our consciousness is not realistic. If it were, there would be

[1] Marshall, *loc. cit.*

[2] Cf. Thouless, *General and Social Psychology*, 3rd edition, pp. 293 *et seq.*

[3] The trouble is that we are incapable of maintaining scientific rigour in practice. Economists are constantly led into making theoretic pronouncements about practical problems, for which the narrow basis of their scientific assumptions gives exactly no justification. We must do the best we can in practice, and, as we are placed, we may expect to go on so erring to the end of time. But it is well to realise our limitations.

[4] Pigou, *Economics of Welfare*, 3rd edition, p. 23.

no question of choice. Strictly speaking, the largest utility price ratio would inevitably be "chosen."

Thus it appears that for Marshall and Pigou utility was sufficiently equivalent to "anticipated satisfaction" or "desiredness" [1] at the moment of purchase. Each of these is a straddling term. In each we can discern the first hint of the modern subjective developments. If, however, this desiredness were no more than the roughly proportional response to Bentham's power in objects [2] to create desires in us (their utilities being equivalent to the satisfactions they *actually* in some sense afford these desires), then an important result would follow from Marshall's shift from utility to desiredness at purchase. For only the strongest among our *desires at the moment* could exactly reflect this power in objects. This conclusion cannot be avoided if utility is accepted at all, and if "power in objects" is interpreted strictly, as surely it ought to be. Thus, strictly, Marshall would be confined to a purely mechanical interpretation of human economic choice. This, however, was quite impossible for one with his deeper ethical convictions. Of all the great economists, surely Marshall was the most perfect perfectionist. "The truth seems to be that as human nature is constituted, man rapidly degenerates unless he has some hard work to do, some difficulties to overcome; and that some strenuous exertion is necessary for physical and moral strength. The fullness of life lies in the development and activity of as many and as high faculties as possible." [3] This is the essential Marshall, and it is a typical expression of perfectionist faith—"the growth of those habits of body, mind and spirit in which alone there is true happiness." [4] It is true desiredness is not desirableness. But to Marshall the perfectionist, the latter must be the major premiss, even though, with ironic austerity, he evaded discussing it.[5] And even desiredness must contain some autonomous element for individual conation, in which case it cannot merely reflect the

[1] Pigou, *Economics of Welfare*, 3rd edition, p. 23.

[2] "Power in objects" is, so far as I know, Mr. Little's phrase (*Critique of Welfare Economics*, pp. 7, 19). It seems to me entirely apt. I have not found it in Bentham's writings, but his usual definition of utility amounts to the same thing: "by utility is meant that property in objects, whereby it tends to produce benefit . . . etc." (Cf. the third paragraph of his *Principles of Morals and Legislation*.)

[3] Marshall, *op. cit.*, p. 136. Cf. *Memorials*, pp. 82, 89, 367, 368, and generally Talcott Parsons, *The Structure of Social Action*, Ch. IV.

[4] Marshall, *op. cit.*, p. 17: "Satisfactions" can cover "all incentives to action"—even "the desire for excellence for its own sake" (p. 89), presumably.

[5] Marshall, *op. cit.*, p. 17, footnote.

exact power in objects to afford satisfactions. In sum, this gentle change of emphasis by Marshall makes a theory of choice possible for economic theory, where it was impossible in strict logic for utilitarian thinkers. The strongest desire in some sense is also chosen; and " chosen," if it is to be used at all, must add something, especially if Marshall's " anticipated " is to mean anything. Although Marshall preferred to leave this process vague, there is really no doubt that he believed choice had some reality and final importance.

The scheme outlined by Professor Hicks,[1] mainly following Pareto, appears to suggest an explicitly less mechanical view of the choice process than the strict Marshallian formula. Maximum total utility is in principle undisturbed as the rational assumption for economic theory and behaviour. We are regarded as having achieved a sum of maximum total utility, or as being capable of achieving such a sum. Quantities of utility are, as it were, aggregated in this homogeneous final economic estimate. Choice then has simply to answer a relative question: which is the better of the alternatives open, in respect of the greater amount of utility expected? " How much better " (the exact quantities involved) is a question about which economic choice need not concern itself. The psychologist is indeed apt to suggest that the economist *should* not concern himself with exact measurements of the strengths of desires, as the intensities of desires are incapable of exact measurement. " It is price alone which is exactly measurable, and a price does not even indirectly measure a desire." [2]

This more relative individual treatment is bound to suggest that the existence of will centres in individuals implies *some* autonomy in economic choices. We do in some sense influence valuations when we choose the better of two or more competing claims on our scarce resources. The coercive power of objects is here ascribed to the remote lodestone of assumed maximum utility, where it tends to be taken for granted and properly forgotten. The traffic of everyday concern is rather at the margins of choice and the markets. At the margins we are represented as finally coming to rest, because equally balanced between alternative additions to total utility, between which we are mathematically " indifferent." Whether we ever decide on one or the other, or why we should, is not examined, and on this formulation of " choice " there is no reason why it should be. For " choice " is here determined by bare empty equality. We hang in perfect balance, at least sustained by the demonstration that maximum

[1] J. R. Hicks, *Value and Capital*, Ch. 1. [2] Thouless, *op. cit.*, p. 294.

total utility must be achieved. *Up to* this point we must choose the most intense present desire; but at equilibrium we must presumably rest in suspense. For a balance can be maintained only if the two forces suspending it are kept equal. It will later be argued that this suspense cannot really leave us indifferent, simply because we characteristically dislike suspense, or continuing balance between alternatives, where a choice must be made. However that may be, there is at least a swing here in the position: for "indifference" or "preference" are at least bound to be states of individual consciousness—they can primarily be nothing else. If, then, we have two desires, as between which we can be indifferent, or express preference, it appears that this must mean something different from two equal powers in objects, if we can to any extent influence the decision, apart from these powers. And this at least suggests the need to examine those rather more refined theories of choice which suggest a libertarian, or rather a rational element: theories which suggest that we choose what in some sense appears good to us, a sense other than mere single-line greater quantity or strength, and that we so choose to some extent at least because it so seems good to us.

It may be doubted whether the preference approach does more than suggest or leave open these wider views; and then only if we wish to explore them. For what finally determines choice under that approach in our recent economic texts is the fact that the ***highest*** indifference curve (actual or possible) must be chosen; but this is really only the greatest total utility criterion. What in fact determines the optimum position for choice under these criteria is simply the scarcities of the factors of production and the assumed inevitable decline of our actual powers of appreciation. And even in the positions of indifference, on this theory I should not choose. A choice would be less mathematically rational than continued suspense between equals. But it would assert equality in what is in the nature of the facts bound to be in a wider sense the opposite of indifferent, if suspense is in fact disagreeable. Still, the door has been opened, if only just. The preference statement at least reflects some uneasiness among economists as to whether their assumptions are in any real harmony with the facts. This at once suggests that an obvious test of this important issue would be to compare the actual assumptions of economists about economic choice with the broad consensus of the descriptions of choice we find in modern psychology. Is, then, the testimony of psychologists unanimous and clear? And, if so, how does it square with the economists' assumptions?

II

I have made such study of accepted modern texts in psychology as appears necessary.[1] From this, it seems apparent that they present a clear and surprisingly unanimous interpretation of the broad nature of human volition; an interpretation amply sufficient to reveal the narrow inadequacy of the economists' assumptions. Quotations are taken largely from Stout, because his writings have seemed to me at once the clearest and the most penetrative of those studied. But, Ward, Thouless and Woodworth are, so far as I can judge, in agreement with the essentials, which concern this argument, of Stout's picture of the stages in willing. This process is regarded as taking characteristic shape when ideas become sufficiently self-subsistent to offer a basis for desires. Desire is in turn characterised by the presence to consciousness at once of a feeling and a conscious picture of how to satisfy that feeling. To quote Thouless's excellent summary, "Desire is a feeling condition of unrest which is directed towards the attainment of an end represented in consciousness. The difference between a desire and a mere impulse is that this clear mental representation of an end is absent in an impulse. Desire differs from emotions in the fact that it is prospective [2] in its direction—*i.e.*, the feeling refers to something which is to be attained in the future (and not to something in the present situation)." [3] This analysis of desire in turn requires an active unit of consciousness to hold together the feeling and the "clear mental representation" of its potential satisfaction. So a continuing self or centre conscious of and capable of rationalising such different elements is necessary to render such desires and their definitions intelligible. Stout amplifies the nature of this self: "Under the concept of the Self as expressed in the word 'I' is included in systematic unity the life history of the individual, past, present and future, as it appears to himself and others; together with all its possible or imaginary developments." [4] The willing process is then simply the activity of this self as in some sense making the best for itself of the situation and the problems

[1] They are G. F. Stout, *Studies in Philosophy and Psychology*, and also his *Manual of Psychology*; James Ward, *Psychological Principles*; R. H. Thouless, *General and Social Psychology*; R. S. Woodworth and D. G. Marquis, *Psychology*.

[2] Or as Marshall said, anticipation is involved. Desire requires a theory of expectations.

[3] Thouless, *op. cit.*, 2nd edition, p. 358. The wording is slightly different in a way that does not affect the argument in the 3rd edition, p. 290.

[4] Stout, *Manual*, 3rd edition, p. 705.

raised by the conflicting claims or feelings of dissatisfaction and the visions of possible satisfaction which it experiences in desire. "Voluntary action is to be sharply discriminated from impulsive action, and deliberation from conflict of impulsive tendencies. The difference is, that in impulse action follows the isolated conative tendency; whereas in voluntary decision special conations and their ends are first considered in their relation to the total system of tendencies included in the conception of the Self." [1] Choice is then simply this self's identification of itself as a continuing centre of awareness in memory, in present integrated awareness or action, and in future forecasts, with the preferred claim. "Voluntary action does not follow either of the conflicting tendencies, as such; it follows *our preference* of one to the other." [2]

This choice is clearly far from automatic. All these authors are emphatic, accepting it as almost requiring no argument, that the process, when the self is faced with these claims, splits into two clear stages. First comes the stage of deliberation between the claims. This stage is at once logically necessary, if a description of the willing process is to recognise the accepted fact that it is here, in some sense, other than a mere reaction to the power of objects; and also it is quite irresistibly imposed by the facts revealed by introspection—a reason specially conclusive for psychologists. The second stage is then the decision to adopt one of the conflicting claims for execution. And here again all the psychologists studied insist that this is not merely or truly the recognition of the "strongest" claimant. "The alternative is not 'this'? or 'that'? but 'shall *I* do this'? or 'shall *I* do that'? Each line of action with its results is considered not in isolation but as part of the ideally constructed whole for which the word 'I' stands." [3] What I deliberate about then is whether *I* should do this or that. This difference between deliberation and decision Stout describes in such terms as these. "While the process of deliberation is going on the motives are motives for deciding: when the decision is made, the triumphant motives become motives for action." [4] Or again, "While deliberating we are making up our mind, and we do not know what our mind is

[1] *Op. cit.*, p. 706. The passage in Stout's *Studies*, pp. 54–9, amplifies and illustrates his account of voluntary action. One cannot forbear from quoting here his well-known parable, ending with "A self can hardly consist in a sneeze" (p. 59). Can it not in positive economic theory?

[2] *Op. cit.*, p. 706. My italics, to notice an interesting use of the word which economists have adopted.

[3] Stout, *Manual*, p. 707.

[4] *Idem*, p. 709.

going to be. When we have formed a decision, we have come to know our own minds. The conception of the Self has become fixed where before it was indeterminate." [1] Indeed, " in a perfect volition, opposing impulses are not merely held in check; they are driven out of the field. If they continue to exist, they do so as external obstacles to a volition already formed." [2]

This last statement reflects a vital conclusion to be drawn from the psychologists. It is that choices, voluntary decisions, are unique. Choice is not a mere desire, nor yet is it only the strongest desire. So, if preference is meant to mean no more than strongest desire, and that seems to be the general intention, then in the interests of consistency, " preference " should be confined to the activities of the deliberation stage, as meaning the most attractive at that stage, but not as involving choice. This strongest or preferred claim is then raised to the unique and qualitatively quite different status of choice simply because by being chosen it has been distinguished among the contesting desires as that one which the self recognises as best fitting into its own unique experiences and situation and programme for action. Woodworth elaborates this uniqueness by showing how " if a motive appeals to him against his total interest and best judgement, he can mobilise other motives and organise a team of motives that shall be stronger than the single motive. This so-called ' will-power ' is really the whole individual mobilising all his powers so as to accomplish what he most wants to accomplish " [3]—surely a quite convincing and clearly important statement of fact. Stout again illustrates how " the judgement that we are going to act in such and such a way shapes our thoughts and our other volitions into consistency with itself." [4] He continues with a vivid account of the " fixity " of the will, based on the identification of the self with *its* choices. The distinction is also stressed in the definitions Stout offers of desire and voluntary decision. " A volition is a desire qualified and defined by the judgement that, so far as in us lies, we shall bring about the attainment of the desired end. Mere longing may be defined in the floating idea of an end. Mere desire is defined in this idea together with the problematic judgement that we may or may not attempt to realise it." [5] Decision, or choice, adds to the felt presentation of a want, or to deliberation on desires, " a judgement that so far as in us lies we shall bring about the attain-

[1] Stout, *Manual*, p. 710. [2] *Idem*, p. 711.
[3] Woodworth and Marquis, *op. cit.*, p. 374.
[4] Stout, *Studies in Philosophy and Psychology*, p. 55.
[5] Stout, *op. cit.*, p. 53.

ment of the desired end," if possible. In longing, then, we are positively not considering attainment as for us possible; in desire, a felt want or idea of an end is regarded as problematically, or alternatively attainable; and volition adds to this a judgment that a certain end is to be adopted as *our* experience, our responsibility, our expression of ourselves. And these distinctions are reflected from no ethical or metaphysical *theories*: here we have psychologists obstinately striving to describe the facts, and nothing but the facts.

The argument has so far been concerned to state the process in the very simplest terms. This properly brings out the fundamental point—that there are two stages, one of deliberation and the later stage of choice. It is then fairly clear that the economic process ("economic choice," where economists use the phrase) must attach characteristically only to the first stage—deliberation. For it would be difficult to maintain that in practice we ever make a realistic choice or final decision for economic reasons alone, or to enjoy an economic experience only. It might be answered, "but this is true of every experience: we never choose any experience to secure any single analytic satisfaction." This, however, I should maintain, is not true of ethical or moral choice, in which sphere choice finds its real stature, and the very nature of which it is to be comprehensive as to all possible satisfactions, and to express the full man. To argue this would take us too far afield. We can meanwhile avoid the issue by limiting ourselves to a positive view of economy as the means, when the need for economy, the value of efficiency, are clearly important aspects which we take into grave account at our deliberating stage. Whether they can there appear as possible ends in themselves, or only as means to other ends, is also a further question with which it is not here proposed to burden the argument. The issue is for axiologists—whether economy can in any sense be an end in itself (or have intrinsic value)—and, if so, in what sense? (though since Aristotle they have not found the time to deal with this). The whole category of means and end is very slippery. It is probably best regarded as no more than a useful pragmatic category. For all means have a way of broadening into ends, and so backwards and forwards, in our consciousness and conation. Indeed, the ways in which we can achieve ends are bound to qualify and express these ends. Examples may be spared.[1] But it may be worth remarking that the true use of the end-means relation has been rather falsified by economists, simply

[1] Cf. Ross, *Foundations of Ethics*, pp. 192, 195.

because in the economic processes of modern industry and exchange, economic means seem so obviously to be merely means, and the ends to be outside the economic (or rather industrial) process. This is, of course, especially typical of the nineteenth-century tendencies in theory and practice. We to-day may at least have a somewhat truer understanding of the end-value qualities in our economic activities.

We must, however, notice that so far we have given the very simplest outline possible of the process up to a volition. The processes of deliberation and choice are much more complicated and prolonged than has so far appeared. Sir David Ross has said as much on this matter as seems necessary for completeness here —in his chapter on "The Psychology of Moral Action." [1] He writes there that "attraction by an end is enough to set up consideration of means": (here he reminds us of the arduousness of the means involved in becoming, for instance, Prime Minister). If there is no such consideration of means, we have not reached beyond mere longing. He tells us further, however, that "to choose is to choose to take means to the attaining of the end." That is, we mean to act. This does not, of course, mean that in choosing we choose merely means; it is the decision to take the means, some means, that is characteristic. We have already presumably decided on the best means among the alternatives, when we were at the deliberation stage, before we had decided finally on any course of action. Some idea of the complications involved is, however, illustrated by this passage: "A certain amount of deliberation as to particular means has probably taken place before the choice 'to take means to a certain end.' For a wise man, at any rate, will not choose so unless he has satisfied himself that the unpleasantness or the unworthiness of the means does not make the end an end not worth pursuing at the price. But it is enough at this stage to have assured oneself that there *are* means such that the end is worth aiming at by the use of them. The agent may have assured himself of so much, without having assured himself that he has thought of the *best* means to the end. Thus, after the first choice, *the next step is a further deliberation*, in which the problem he is trying to solve is not, as before, what end he is to take the means to, but what means he is to take to the end he has already decided to pursue." [2]

[1] *Foundations of Ethics*, Ch. IX.

[2] Ross, *op. cit.*, p. 196. I have italicised "the next step is a further deliberation."

III

The results of this comparison between our psychologist's description of choice and the simple economic assumption about it (that choice is no more than the strongest preference) suggest some interesting consequences. This article will mention only some which seem of special importance. The first is that, on the psychologist's formula, diminishing utility (or diminishing marginal substitutability) must operate, if at all, at the stage of deliberation, not that of choice or decision. For only in deliberation do we judicially compare all the possible lines of action. Marshall reduces the objective side of this process to the possible alternative amount-price combinations at a moment of time. Decision, however, according to the psychologists, connotes that any actual choice is no mere equal alternative. It is uniquely adopted, in actual life. But it cannot be so in economic theory. A position taken only because its utility is greater (or its indifference curve is higher) is so " choosen " for this purely objective reason, and for no other, the rational conclusion from any succession of figures. It " chooses " itself: the objects enforce the decision. But this conflicts with the essence of the psychologist's description. For the " I " adds nothing to the nature of the economist's " choice." No deliberation is necessary, for the " choice " is determined. If this is so, it would be more consistent, if less realistic, to miss out reference to choice altogether in positive economic theory. Certainly Marshall, with his apparently instinctive genius for avoiding inconsistency, adopted this course. For his method of postulating demand and supply schedules at a moment of time, meeting at equilibrium points, requires no flirtation with subjective elements in the psychologist's doctrine of choice. And it gives determinate results, so long as we confine ourselves to the mere logic of a tendency to diminishing utility. Marshall realised, indeed insisted, that the facts, in the shape of the increasing returns tendency (plus human nature), must disrupt these equilibria; and the supply side also reflects the " choice " motive, for rationally, enterprisers must prefer increasing return techniques, and, therefore, disequilibrium.

As the tendency to diminishing utility is dominantly a part of a deductive technique, we should not perhaps expect that psychologists would offer much support for it in their description of the *facts*. They certainly do not give any support to a Benthemite (purely objective) " power in objects." On the contrary, any references made are in subjective terms; for this surely

follows from their insistence on the subjective determinants of choice. Stout, discussing "The Herbartian Psychology," refers to a "law of diminishing susceptibility." [1] "The rate of increase (in sensation) is smaller in proportion as the pre-existing quantity of sensation is greater." This seems to me about as much real concrete meaning as any formulation of this "law" can bear. For, as soon as you rise above sensations to the desire stage, you introduce the self as desiring; and then you link up with anticipation, and with all the other desires. But then, for analysis, the astringent limits of "*ceteris paribus*," must be imposed. And in consequence each general "law" dwindles to one artificially isolated case; a tracing of strictly abstract reactions, as in fact "other things" cannot remain equal. Our "realistic" law then becomes no more than a prescription of method.

Still, that prescription as to diminishing desire (shall we say?) is probably the most fruitful hypothesis we can make as a mere start to analysis. What does emerge is this: any comparison of degrees of desires in their scales, however exactly plotted, is bound to be prior to the stage of choice. For choice, the psychologists say, transmutes the chosen desire to another level of estimation and experience. Consideration of degrees of desire must then take place at the level of deliberation. For it is there that the economic process seeks to give exact definition to the objective alternatives, the intensities of the desires, as an aid to choice. And as this deliberation is in essence timeless, or abstractly instantaneous, other things *can* remain abstractly equal at this stage. The only sense in which we can think of a law of diminishing utility as applying to choices could be that as time passes we make a *series* of different choices relative to additions to total growing quantities of our commodity; so that if we have successively a greater supply, other things equal, the satisfaction from one unit in *successive* choices would diminish. But the psychologists, and common sense, would here at once insist that in fact a change in the conditions, not any special law, was the determining influence. So again Marshall's timeless schedules seem alone to achieve consistency; but this only by analysing possible alternatives abstractly as grounds for deliberation. The schedules do not rise to the level of choice at all.

A further issue on which these psychologists are refreshingly unanimous is as to the nature of the state of suspense (or "indifference") in deliberation. They agree, indeed insist, that we

[1] *Studies*, p. 13.

find this suspense in itself unpleasant, positively unpleasant.[1] It follows that the conception involved in indifference, in its mathematical simplicity, simply cannot describe our actual state, even at the stage of deliberation. For even if we were indifferent as between the specific pulls of two (equal) desires, the unpleasantness of being in such suspense between them would force us to choose; this added to the consideration that the need to use our scarce resources to the full enforces some choice. Speculation might suggest that we could throw the suspense displeasure into the scales of our alternatives. But this is irrational, because the displeasure of suspense affects each possibility equally, so long as it is only a possibility. A spin of the coin may then have theoretical as well as common sense. But in fact, as all our desires are unique, and so cannot have this merely mathematical type of equality, it seems that in practice we do make our choices on concrete estimates of the different *qualities* of desires. Even if we like to play with the idea that the pain of suspense might be equalised at the margins to the positive pleasures of the alternatives between which we are indifferent, the result would not be absence of choice. We should choose, for the positive reason that we can always so rid ourselves of the positive pain of suspense, without any equal loss of another alternative, as is the case between equal pleasures for both of which our resources are insufficient.

It appears then that, as well as being inapplicable at the choice stage, the indifference positions are not true descriptions of the counters at the debate stage. When we deal in preferences, we should try to think concretely. Indifference as a concept seems then suitable only in pure equilibrium theory—suitable enough for mathematical economic exercises in which deliberation and choice are out of place. Actual economic activities result never in indifference—or if they do, indifference simply means the issue is trivial. Where deliberation is on concrete claims, indifference could in fact correspond only to absence of desire, the antithesis of any unique act of will, at any stage. Indifference might be present in longing, or day-dreams, where and just because possible choices and realisation are not in question. But the general result is that the term adds nothing which cannot more truly, less dangerously, be rendered by a mathematical term; for such a term will at least not suggest any realistic relevance. It might be argued that when deliberation judges the " intensities "

[1] Cf. Stout, *Studies*, pp. 51–9; Woodworth, *op. cit.*, p. 372; Thouless, *op. cit.*, 3rd edition, Ch. XV, especially p. 231.

of the claims equal, it might rest in positive contentment with this equality. The desires are extinguished by mathematical necessity: or, to put it more fairly, it might be held that it is *rational* to desire what gives maximum total utility, and pushing forward to indifferent positions secures that. The short answer is that we just do not desire indifference. We desire certain concrete experiences, and experience always presents us with positive examples of these in embarrassing profusion. The choice is for one of these (and rational activity can, of course, be one of them). Choice lies always between different forms of experience as embedded in the matrix of our active lives. Even a mathematical economist cannot lay his hand on his heart, and affirm that he ever typically desires indifference, or chooses it at the margins. The psychologists certainly tell us very insistently that, while we can desire the rational because it is rational, this is rather unusual, and is intermittent, even with the elect. We can desire to create rational *systems*, but the bulk of the desire field is occupied by claims which spring from emotions, sensations, propensities and sentiments, in themselves neither typically rational nor entirely capable of rational integration—indeed, obviously often the reverse.

We may also ask whether psychology makes any use of the economist's maximum hypothesis as affecting choices. Certainly, as far as the process of conation goes, the psychologists seem content with a precise description of the growth of desires and volitions. In this, the need to be rid of suspense seems at least a *sufficient* cause for making decisions. This is as far as the cautious descriptive psychologist need go. As to the nature of human goals, the end of conation, inquiries into the nature of happiness, or theories of the good, or of rights and duties—all these the psychologist justifiably refers to the moralist, as interested in the question "why"? Psychology need hardly go beyond the "how" of it. The economist has this justification for seeking a maximum, that he may claim to go rather farther than the psychologist, though in a much narrower vein. He may say, we are concerned with the question "How much of each?" (Each, he assumes, yields homogeneous satisfactions in some undefined sense, each of which is subject to satiation.) So far as he so limits himself, he can arrive at determinate final conclusions. But if he slides into applications, and implies that these assumptions are adequate for real choices in business or life, he will then get the reverse of support from these psychologists. For they insist on continuous, essential plasticity as distinct from "*ceteris*

paribus": they insist on a plastic integrated experience developed by an individual centre of consciousness dealing with a multitude of claims of different quality, and with prospective imagined satisfactions, as distinct from the isolated slide under the microscope of the theoretical economist.

Our psychologists are indeed again unanimous that our decisions are *not* typically determined by the strongest or most intense desire reflecting some greatest possible "utility." The question of their intensity can certainly be and is constantly deliberated at that stage. But choice is far from being determined by any factor that can truly be described as strength or intensity. Toothache can be as intense as any experience; but we do not always, or typically, choose to have the tooth pulled. The suspense of a young man worrying as to accepting or refusing an offered post can be the psychic pit of misery. But even in these, as in any cases, we can choose the longer view, not to mention the better view. Characteristically, we do not inevitably give in to even excruciating suspense or agony. And we spin a coin only over trivialities. We more typically steer our course by a view of our whole experience, past present and to come. Such decisions are clearly unique. As against the wider sweep of this psychological description, the economist's narrow one-way analysis of diminishing marginal substitution must appear thin and very provisional. Yet it is the right first step, and economists can confidently point to the results they have achieved, as compared with other social sciences. All is well as long as we remember our limitations. And the substance of individual psychology does at least reveal to us rich prospects for development. It suggests that at some stage and in some way we may advance towards the systematic organic level of the activities of individual selves, towards the subtle comparisons and blends of their actual satisfactions, as against the analysis of artificially isolated wants. But here we glimpse only a possibility. We have not taken an assured step on this journey.

IV

The main result of this comparison is the suggestion that positive economics should eschew the use of indifference and choice, as strategic categories or foundational terms in its structure. (It is not necessary to avoid the use of the words in the everyday vocabulary of the science: indeed, in the case of choice at least, this would be inconvenient and tiresome.) The reason is a positive one. The strategic use of indifference and choice builds

Economics on an empty or on a false basis. Indifference has no real contact with the human process of voluntary decision at any level worth considering; and if economists begin by assuming that it has, they lay themselves open to deductions which are positively false in relation to that experience. Choice, on the other hand, if exactly used, is too concrete. It cannot be dealt with by the methods of analytical positive Economics. It involves a qualitative change from the stage of deliberation on which psychologists so unitedly insist; a change caused by the synthetic process of self-identification with the proposed act, and by the process of fitting it into the whole personal experience. It is therefore a term strictly suitable only for the treatment proper to normative sciences. The term preference is, however, at once entirely proper for positive Economics, and entirely correct in relation to the stage of deliberation as between claimants in the competition for scarce means. For it is essentially and completely a relativist term. It therefore fits the ordinal positive analysis, as contrasted with the absolute final nature of choice or voluntary decision. Its use will make the boundaries of positive Economics clear and accurate.

There may be speculation as to the place of welfare economics in this argument. Any remarks at this point must be entirely tentative. But the psychology of the matter seems to indicate that if welfare is accepted as in any way determined or influenced by human choice, then it cannot be adequately treated within the limits of positive Economics, as here defined. If so, if welfare means what it seems to say, then it would need to come under the general rubric of voluntary decision. It would deal not only with means as means, but also with the economic reasons for making final decisions, or for choosing ends, in the strict sense of choice. And the fact that all means have inevitably end qualities, and that all ends can themselves become means to further ends, indicates broadly the proper scope for a normative science of welfare economics. It could grow only in relation to Ethics and Social Anthropology. The question how far economy or efficiency have intrinsic value, if at all, would be bound to arise here. But at our present stage, these are mere speculations. They at least suggest that the prospects for Economics are as vast as they are obscure.

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NOTES ON USER COST

USER cost is a concept widely known, little understood and almost never used. These four notes discuss, in order, Keynesian user cost, user cost as a determinant of current output, the calculation of user cost and the difference between user cost and "retainer cost."[1] A few remarks on the usefulness of the concept will be found in each part.

It will be seen, in what follows, that finding user cost involves a precision of calculation far beyond the habits or resources of the entrepreneur. Even if we could show that some entrepreneurs do make decisions of the completeness described in Part III below, it is unlikely that there is any business "ritual" which generally corresponds to such an ordeal. When, to this difficulty, we add the further obscurities of uncertainty and risk, and the subjective attitudes to them, it becomes quite clear that rough-and-ready planning, what text-books call long-run profit-maximisation considerations, is the most that we can expect of entrepreneurs. User cost is an economist's tool of analysis, one which can be applied to situations where short-run maximisation is obviously not relevant, and one which may prove useful in policy discussions of the stock of capital or resources. He is a rare entrepreneur who thinks and talks in terms of marginal cost or revenue; and we are not here assuming that even he explicitly considers user cost. But often in many industries, occasionally in some, user cost is implicit in current decisions.

I

The owner of a good or service may earn a net revenue by putting it to a certain use, in production or consumption. Other uses might also earn him a net revenue—consuming or producing in other ways, leasing or selling to others. These other uses may take place in other periods, and there may be opportunities to postpone *this* use till a later period. These alternative net revenues are the *opportunity costs* of putting the good or service into this use, and the greatest of them is called *the* opportunity cost. When the net revenue exceeds the opportunity cost, the

[1] Professor F. W. Paish commented on an early draft of these notes, and I have since had the advantage of discussions with Mr. Edey, Mr. Solomons, Mr. Yamey and Mr. Harry Johnson.

owner cannot improve his position by transferring the good or service to other use.

The relevant net revenue from a certain use, and the opportunity cost of adopting it, are measured in the satisfactions received, or expected, by the owner. Comparisons can therefore be made only by the persons who value the revenues and costs. Outsiders, who can, at best, assign only money values to these satisfactions, will probably be in least error in the case of frequently sold articles of commerce. This suggests that the highest-*market*-priced alternative may be the opportunity cost of a certain action, but private surpluses received cannot be known. Net revenue is here defined to mean the difference between current costs and current revenues, when current costs are outlays made in connection with production and selling activities.

From the point of view of the owner of a good or service, opportunity cost is the same as Mrs. Robinson's transfer earnings and transfer price,[1] while rent is the difference between this transfer price and the earnings actually received. On the other hand, from the viewpoint of the entrepreneurs, the opportunity cost is the greatest alternative net revenue he could receive either by putting these goods and services to other uses or by selling them and using the proceeds in other enterprises. When *timing* of use is as important as its nature, the minimum entrepreneurial opportunity cost is the interest yield of resources lent out to other entrepreneurs.

User cost, as distinguished from opportunity cost, is a term invented by Keynes. The term is currently applied to the opportunity cost of putting goods and resources to a certain use, future alternative revenues being given equal weight with present alternative uses. Thus the suggested meaning of user cost covers only goods—tangible assets—yielding revenues measurable in money, as a special case of opportunity cost, which covers goods, factors and services, yielding psychic and money net revenues.

Keynes introduced the concept for a special, and different, purpose; to define income rigorously so that consumption and saving could be firmly explained by it. User costs are a diminution of personal income—the greater they are, the smaller is income, the smaller they are the larger is income, and if they become negative, their absolute value is added to income. Thus consumption is a function of income minus user costs. Keynes does not give much explanation, but presumably the theory is

[1] *Economics of Imperfect Competition*, p. 104, cf. Henderson, *Supply and Demand*, p. 96.

that a first charge on personal income is user cost, followed by consumption-and-saving decisions.[1]

Keynes's formulation of user cost can be expressed as

$$(G' - G) - B' + A_1$$

that is, user cost is primarily equal to $(G' - G)$, where G' is the value of entrepreneurial stock and equipment had they *not* been used, and G is their value after use. This expression must then be reduced by B', the outlay on factors and stores necessary to keep the equipment in optimum condition if they are unused; G', in other words, overstates the value G' would have had if the equipment were neither used nor maintained. On the other hand, the expression must be increased by A_1, outlay on the produce of other entrepreneurs, for during use purchases have been made which make G greater than its value after use would be without maintenance, improvement and re-stocking.

Keynes divides the expression into two parts. The first, $(G' - G) - B'$, shows the change in the value of stock and equipment which has taken place because it was used. It is a decrement, or increment to capital, for him and for society, so that it can be called investment, I. The second part, A_1, is relevant only to individual entrepreneurs, as it shows the position of investment which has merely been purchased from other entrepreneurs. For an integrated and/or aggregated society, A_1 can be ignored, since it does not affect the total I, but merely the ownership of it. Thus I, which is total investment minus total disinvestment, is equal to total user cost, though of opposite sign: if total social user cost is positive, social investment is negative. If we subtract from investment the "supplementary," involuntary, expected depreciation by obsolescence, wastage or mere passage of time, we have $I - V$, or $-U - V$, which is net investment.

Lerner, discussing Keynes's treatment, has suggested that the difference between the value of the asset after production, and what it would have been without production, $(G' - G)$, be called *prime* user cost.[2] This is the concept to be used in this paper.

[1] *General Theory*, "Appendix on User Costs," p. 66, see also pp. 57, 92 and 98–104.

[2] Cf. A. P. Lerner, "User Cost and Prime User Cost," *American Economic Review*, Vol. 33, pp. 131–2. Lerner considers that the question is whether to subtract F', the factor cost without extra production, from *actual* factor cost to find marginal cost (which he would suggest); or from user cost, as Keynes did. (Lerner says Keynes's $-B'$ is actually $-F' - A_1'$, where A_1' represents purchases from other entrepreneurs when the extra output is not undertaken). We should add that if the output considered is the production of a *marginal* unit F' must be

It is a measurement of wear and tear during use, but only to the extent that it is not made good, so that prime costs will be overstated by that part of current outlay devoted to maintenance and replacement. There is thus no simple algebraical function relating Lerner's prime user cost to output alone, for its value depends also on entrepreneurial decisions about maintenance and replacement.

This substitute definition is the more suitable one because Keynes's user cost is an aggregative concept. His concept, he wrote, analyses "the current proceeds of production unambiguously." [1] "If the reader tries to express the substance of this otherwise, he will find that its advantage lies in its avoidance of insoluble (and unnecessary) accounting problems." [2] As matters have so far turned out, Keynesian user cost has not formed a satisfactory aggregate in calculating income, but the insoluble accounting problems he mentions must still be attempted when analysing entrepreneurial decisions about output. The modified concept, *i.e.*, the fall in value of equipment, unqualified by the expense of maintenance necessary if it were not used, is easier to work with for this purpose than the Keynesian definition.

The *ex post* nature of Keynes's discussion of costs should also be emphasised. Some sort of period analysis was implied, but planning of output, and functional relationships between the cost, price and output of each period were neglected. In this paper, however, we wish to show that *ex ante* user cost is necessary to explain current decisions, and that economists cannot afford to lump together, as "depreciation," changes in present value caused by the passage of time, and by use.

II

Before considering how user cost can be ascertained, let us see how it can be used. Net revenue (the residue after current outlays are subtracted from current revenues) varies with the current rate of output. Current outlay is distinguished from other day-to-day outlays, in being avoidable. User costs pertain to pieces of machinery and equipment which must be presumed

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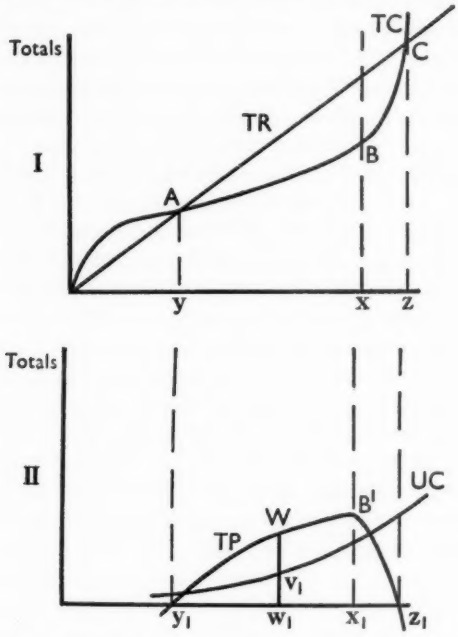
the existing average cost of production. But if a marginal unit involves a decision to open a plant, F' is presumably the factor cost of guards, maintenance, etc. This is important in discussing unemployed equipment—Keynes's "redundant" materials and ships; cf. *General Theory*, p. 69.

[1] *General Theory*, p. 66.

[2] *Ibid.* The word "accounting" here refers, presumably, to the work that accountants do, for the problem is certainly not confined to accountancy.

to be already in the possession of the entrepreneur. Thus unavoidable outlays undertaken in connection with paying for the equipment, or interest charges arising from such payments, are not current outlays. User cost is, in fact, a tool of analysis applicable in discovering whether the initial investment in equipment is profitable, with special reference to the durability of the machine and the duration of its profitable output.

As long as the entrepreneur can, by changing the rate of



output, add to present net revenue more than the consequent reduction of future net revenue, it is rational to continue to alter the rate. The consequent reduction of future net revenue is measured by the user-cost curve, and it is this we wish to confront with the net-revenue curve. At some output the two will change at the same rate, and the net position then cannot be improved.[1]

In Diagram I we show the total revenue curve TR (here assuming pure competition; the actual slope is irrelevant). The outlay curve TC cuts TR in A and C, and the current net revenue, the distance between ABC and AC, is largest for output x. As

[1] Cf. F. Lutz and V. Lutz, *The Theory of Investment of the Firm*, Princeton, 1951, Chap. 4, where a diagrammatic approach to user costs is introduced.

mentioned on p. 371, outlays here include maintenance expenses needed to keep the equipment in the optimum state of repair.

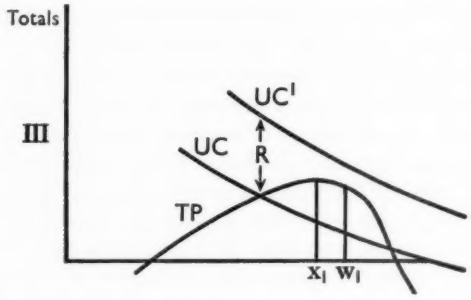
Instead of considering this output, let us instead consider the whole range of profitable output, by drawing a curve of total "profits" TP as a function of the rate of output. When this is done, we can then draw as a function of output the curve which expresses the user cost, UC, of the output in question, (Diagram II). What we now wish to maximise is the distance between TP and UC; this will occur where the two lines are parallel, that is, where marginal user cost = marginal net revenue. This is the optimum output because, at any smaller output, a small increase will add more to current net revenue than will be sacrificed in capital value. It is thus worth while to add to output until the increase in net revenue is just offset by an equal fall in capital value (the present value of possible yields from this equipment). It should be noted at once that current net revenue is equal to the *whole* distance w_1W, and user cost w_1v_1 is *not* a deduction from net revenue. A useful way of looking at this is that if he maximises the distance Wv_1 each period, the entrepreneur will succeed in getting the largest possible sum of Ww_1s in the long run. In other words, if each period he chooses the output w_1, where the net revenue is somewhat smaller than it would be at x_1, he will in all periods achieve the largest possible total of net revenues.

In Diagram II we have assumed that the user-cost curve slopes upward, so that the optimum output w_1 will be less than that which yields the maximum current revenue x_1. This, it seems, is the typical case. However, it is not impossible to have the opposite situation. If we consider a forest standing in need of pruning and thinning, we see that additional current output will not only yield a current revenue, but will also add to future returns, so that the greater the current rate of use, the greater also will be future yields. That is, the user-cost curve slopes downward, and w_1 will therefore be greater than x_1. The whole UC curve might indeed be negative, but this is not relevant: it is the *slope* of UC, the *marginal* user cost, which determines the present rate of output. (See UC in Diagram III. UC' will be discussed below.)

The equality of the two margins determines the current rate of output; this is a marginal condition. There is also a total condition: at any profitable output total user cost must be less than total net revenue. If this is not so, current use involves a greater sacrifice of future possible revenues than its current yield, and is therefore unprofitable. For example, since new wine

brings in a smaller revenue than its expected yields on maturity, sale should be delayed; regardless of *marginal* user cost, total user cost exceeds present yield.[1]

In the following part we shall ask whether user costs of current output can be more simply calculated than the complicated methods of determining current output which have been



suggested elsewhere.[2] This section will be, in fact, an excursus from our main thread, the effect of user cost on current decisions. We shall return to that subject in Part IV.[3]

III

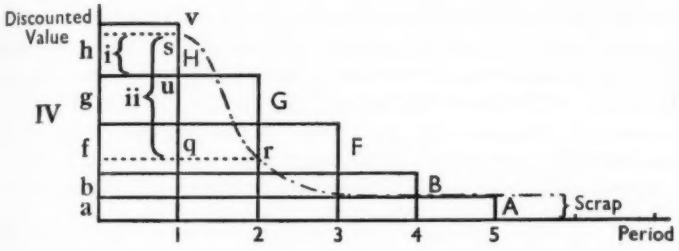
The user cost of a certain current rate of output can most easily be ascertained when a simplified model of a firm's plans over time is constructed. Assume that an enterprise can vary its output each year between zero and some rate so great that it will destroy the plant. A mine, for example, can choose a rate between closing down and attempting to exhaust the mineral within a single period. The manager, as periods go by, en-

[1] When we are considering only the marginal condition, there is no need for the distinction between avoidable and unavoidable outlay made at the beginning of this part. Since unavoidable outlay will not vary with output, marginal net revenue will be the same regardless of the meaning of "outlay." However, when we consider the total condition, net revenue may fall short of total user cost when it is reduced by unavoidable outlay, yet exceed user cost if only current outlay is considered. As explained earlier, the relevant definition of current outlay neglects costs incurred in acquiring and paying for those assets the user cost of which is being ascertained.

[2] By S. v. Ciriacy-Wantrup, "Taxation and Conservation of Resources," *Quarterly Journal of Economics*, Vol. 58, 1944, p. 157, Harold Hotelling, "The Economics of Exhaustible Resources," *Journal of Political Economy*, Vol. 39, 1931, pp. 137–75, and others.

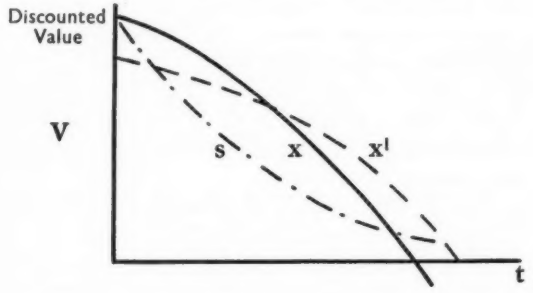
[3] The influence of user cost on output is explicitly discussed by A. C. Neal, "Marginal Cost and Dynamic Equilibrium of the Firm," *Journal of Political Economy*, Vol. 50, 1942, p. 45.

counters varying outlay and revenue situations, revises his own expectations, adopts new methods. Some of these changes occur independently, others depend on his own earlier actions. The latter, the consequences of his own actions, interest us particularly,



for user cost is the opportunity lost when another decision is carried through.

A suitably simple model of a planning enterprise has been given us by Irving Fisher in *The Nature of Capital and Income*. Diagram IV is an adaptation of his illustrative method. Here the enterprise expects to receive items of net revenue (current revenue less current outlay) at the end of each period, numbered



1 to 5. By assumption, the present value of these revenues, which is measured on the vertical axis, is the largest which can be obtained from owning this asset. Each discounted net revenue is the largest obtainable in that period *given* the discounted net revenues of the preceding and subsequent periods. There is no revenue from the 6th period—to operate then would yield a reduction in the previous net revenues greater than the 6th net revenue. Each magnitude is measured by the vertical line in the period, and is carried back along the horizontal lines to the present. The discounted scrap value of the machine in period 5

is equal to A, which is equal to a, where " scrap " merely suggests net revenue from selling the asset into another use.

An entrepreneur with a plan similar to this, who is about to enter period 1, will wish to know how much he should produce during the period, having an eye to the effect of this decision on the net revenue of other periods, and to the ultimate effect on the present value of his enterprise. As we saw in the preceding part he needs to know his user costs in order to make a correct decision. The author best known for his answer to this implied question is Professor W. A. Lewis,[1] in the footnote to p. 10 of *Overhead Costs*, which we summarise here.

There are three user costs of using equipment in period 1 :

(i) The difference between the sum of its remaining expected yields and its value for scrap instead of use in period 1.

(ii) The difference between its scrap value before use and that next period if it *were* used in period 1.

(iii) The yield of the extra future year for which the equipment is available if it is neither used nor scrapped in period 1.

These three user costs can be most clearly illustrated on our diagram, for arithmetical examples appear too much to depend upon the values arbitrarily chosen. Even here, however, we have sharply limited the entrepreneur's freedom, for there is no question of varying the rate of output in any period—it is an all-or-nothing business each time. Marginal user costs, therefore, are not involved—total user cost is either absolutely larger or absolutely smaller than current net revenue.

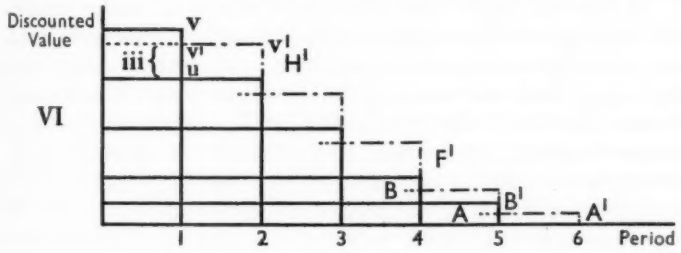
(i) User cost (i), for example, of producing in period 1 (that is, the best alternative net revenue to H $(= h)$) is the difference between what it will be worth after H has been earned and what it would have earned if it had been scrapped before use H was undertaken. The present value of the five planned yields (in this use) is v. The dotted line shows the (discounted) scrap value of the machine if sold in the period *instead* of being turned to the present use. s, then, is the scrap value now. User cost (i), therefore, is su, the difference between the scrap value s, and u, the present value in this use *after* use in period 1. More generally, if user cost (i) is greater than the net revenue, the dotted line will lie *above* A, B, . . . or H.

(ii) User cost (ii) is the difference between the values of the

[1] W. A. Lewis, *Overhead Costs*, London, Allen & Unwin, 1949, p. 10 n.

asset this year and next year, in the scrap market. Next year's net price will be r, $(= q)$, and this year it is s, so the user cost (ii) is sq. This is, in our diagram, much greater than H, the net revenue to be expected from use this year, for the " time pattern of yields in outside uses " is different from the time pattern of uses here, and the asset should be used elsewhere this year and returned to use here next year [1] (assuming physical wear and tear in each use to be the same). If outside wear were of severity equal to this one's, the dotted line would lie a constant distance below the solid one.

(iii) User costs (i) and (ii) are probably the most important to operators of equipment which has an outside use and is in danger of obsolescence. Constantly aware that time is reducing the demand for their equipment's services, they will seek the largest



revenue before fashion or technique make it unprofitable. User cost (iii), however, applies to assets the demand for which is less ephemeral, and the yields of which change in response to changing cost conditions rather than falling demand, such as durable goods and natural resources.

In Diagram VI, the entrepreneur contemplates postponing the first use, and letting the asset " rest " in period 1. All revenues, B, C, . . . H are thus postponed one period, and scrap value A is not received until period 6. These yields are now called B', C', . . . H', and A' is the postponed scrap value. v' is the new sum of discounted values. User cost (iii) is B', rather less than B. Even if it were as great as B, it, and all other yields, suffers a greater time discount. Perhaps a better measure is $v'u$. It will almost certainly be less than vu, the planned yield, if time depreciation and obsolescence reduced successive net revenues.[2]

[1] Lewis, p. 10.

[2] It might be thought that there is a fourth type, not given by Lewis. For example, we might consider the difference between the scrap value obtainable next period after a period's use and the scrap value that can be obtained next

The assumptions necessary, in order that we may conclude that, if the user cost so calculated exceeds the prospective net revenue there will be a change of plan, are that the entrepreneur attempts to maximise the present value of his enterprise, that his rate of discount coincides with that in the market, that the scrap value applies to both buying and selling, that expectations are held with sufficient confidence for action and that transfer costs are included in the other costs implicit in the net revenues.[1]

We have not, however, full information needed for carrying out the method of deciding upon current output described in Part II. There we saw that current output would be at the rate where : (*a*) user cost was less than current net revenue, and (*b*) marginal user cost equalled marginal net revenue. There are two obstacles to using this method.

(i) The user cost of any period is calculated upon the assumption that the rate of output in other periods (both those when use will take place and those when it will not) is given. Thus we have implied, so far in the analysis, that current output is determined, in part, by current user cost. This, in turn, reflects the rate of output in some other period. But that rate of output is determined in part by its marginal current costs. These marginal current costs depend on the previous rate of use the equipment has experienced, that is, on the output of the earlier period. There is thus a circular dependence, for each subsequent rate of output, which helps to determine to-day's output, is itself influenced by to-day's decision. User cost thus cannot determine current rates of output and current prices until the outputs of *all* the subsequent periods have also been decided, all as a single problem. Such problems amount to finding the maximum integral of discounted revenues over time, and can be solved by the calculus of variations, as in Ramsey's " Mathematical Theory of Saving." [2] User cost is, therefore, a tool of partial economic analysis; we must assume that everything else has been decided upon and will not

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period after a period's idleness. The former of these is r (Diagram IV), the scrap value after use in period 1, and the latter is s (scrap value if no production took place in that period *and* if outside circumstances do not change within the period). This user cost will then reduce to Lewis's user cost (ii). I am indebted to Mr. Solomons for conversation on this point.

[1] It is possible to replace these discontinuous lines by continuous curves (Diagram IV). $x_{(t)}$ represents the stepped line $HGF \ldots A$ of Diagram IV, and $s_{(t)}$ is the scrap-value curve. The stepped postponed-yield-line $H'G'F' \ldots A'$ of Diagram VI becomes $x'_{(t)}$. Then the user cost of producing in period (t) is the greatest of the differences between (i) $s_{(t)}$ and $x_{(t+1)}$, (ii) $s_{(t)}$ and $s_{(t+1)}$ and (iii) $x_{(t)}$ and $x'_{(t)}$.

[2] ECONOMIC JOURNAL, 1928, pp. 592 ff.

change as we make our decision. While the entrepreneur can, at a given date, take the past as given, he must make plans now for subsequent periods, so that, if matters work out as expected, each later period will have bequeathed to it equipment and so on suitable for a maximum total revenue over the entire sequence of periods. Therefore the alternatives both after *and before* each subsequent period must be considered in planning the whole period.

In many contexts this is clearly too much to ask, and user cost is therefore not a good tool; for it will often occur that subsequent decisions about output depend so much upon previous ones that contrary assumptions will lead to wrong answers. Yet there are many cases where the assumption that future rates of output are given independently of present decisions is approximately correct.

For example, it could be correct, when conditions exist similar to "imperfections" in market structure: when factors are immobile, when the output is perishable and so cannot be stored, when it is desired to widen the market by offering steady supplies, when suppliers of transport, power and so on require assurances of steady demand before service begins, or when the operational life will be short because of obsolescence, or other factors of time depreciation. Those exploiting natural resources find that labour is hard to attract to their sites, so that they have little expectation of future alterations of the rate of output for fear of losing hard-won staff, or inability to staff sudden increases. It is thus reasonable to suppose that output will continue smoothly through subsequent periods: choices are not made about postponing output (user cost (iii) is rarely relevant), but about scrapping pieces of equipment, or making relatively small changes in the rate of output. In such cases user cost, measured on the assumption of continuing future outputs, may give good results.

(ii) The second obstacle is that in Part II we used not only the level of total user cost, but also marginal user cost, which Lewis's three measures cannot supply.[1] What is needed is a method of discovering the total user cost of each *rate* of output in that period. In principle, the method would be the same as before: find the n best net revenues available from the equipment for each rate of current output, and find how the sum of their present

[1] The Lutz's chapter on cost accounting has a marginal user cost curve, but it is described as though it were a fixed cost for the period: "the opportunity cost of using the machine in the operational period" (*Theory of Investment of the Firm*, p. 63 n.). See also Weintraub, *Price Theory*, pp. 378 ff.

values varies as this rate is changed. Period analysis may well prove to be a difficulty here, since date and rate of output change at the same time, but it is needed in order to find the prices of output and factors at the times when each fraction of the total output is completed. This approach is particularly important in industries when possible variations in rate of output greatly influence future prices and expenses. For example, excessive present timber production may flood the market and cause future losses if the demand is inelastic, while costs may rise if production has damaged forest capital. The demand consideration applied only when the producer has an ascertainable share of the market; the cost consideration only when property ownership is so arranged that present abstinence benefits the abstainer (as opposed to the contrary expectation in oil-fields and whaling). The mathematical calculation of the marginal user cost thus appears very difficult: nevertheless, there is no doubt that user costs differ between high and low rates within a given period.

In Part II we discussed negative marginal user cost: positive user cost which diminishes as current output rises. This is *not* negative user cost, and it is as important here as elsewhere to distinguish marginal from total cost. Negative user cost would imply that a certain rate of output now adds to the value of the equipment.[1] If this should occur, the current output will in any case be where marginal user cost equals marginal current net revenue, and the negative user cost is the discounted value of future net returns. The Keynesian consumer adds this negative user cost to his income. In other words, such a value of user cost is actually investment, cloaked as current output expenditure.

This case,[2] where output in a period is close to zero while user cost falls below zero, is interesting from the point of view of completing a set of Keynesian definitions, but is irrelevant in our own context.

IV

We have, so far, assumed that change in expected net yields was due to previous use (though in our example, service life was

[1] *I.e.*, if this production did *not* take place, the best possible alternative use or rate of use would yield a loss. What does this mean, in the three user-cost categories? If user costs (i) and (ii) are negative, the scrap value before use must be less than the highest value *after* use. If user cost (iii) is negative, the $(n + 1)$th yield must be a loss. All three user costs must, of course, be negative before *the* user cost is. It is not difficult to imagine circumstances where either (iii) is negative, or (i) or (ii) is, but all three at the same time would be unusual.

[2] Cf. Footnote to p. 370 above.

given by obsolescence). This need not be the case. Values of assets also change with time, both predictably, *e.g.*, obsolescence and deterioration of equipment, or growth and depletion of natural resources, and unpredictably, *e.g.*, changes in factor and product markets due to conjunctural changes, or changes connected with this product or its substitutes.

Thus, even if output be zero, so that user costs are zero, the present value of possible net revenues may diminish from period to period. It would be tempting, paradoxically, to christen this diminution "fixed user costs," as opposed to the "prime user costs" so far discussed. Keynes, however, called them *supplementary costs* (not at all the same as Marshall's supplementary costs); other suggestions have been resting costs (by analogy with the resting account of Social Accountancy), time-depreciation and time-appreciation, and Mr. Solomons's "retainer costs." The value of the asset falls as a result not of use but of retaining it over time. Whatever we call them, it should be noted that, while they do not vary with output, their value can, like user costs proper, be at any time negative, zero or positive, and have the additional character of changing predictably or unpredictably with changes in knowledge and expectations.

Thus, for every type of equipment, there will be a prime user cost and a retainer cost of output, the first a function of the rate of output, and the second of the age of the asset. These two costs may be added together to give a curve measuring the fall in present value for each rate of output. When the rate of change of this total function is equal to the rate of change of current net revenue, it will pay to stop increasing the rate of output, for any increase in net revenue would be more than offset by a consequent decrease in present value of the enterprise. But, since retainer costs are, by definition, constant for all current rates of output, the rate of change of the total function will be the rate of change of user cost alone. This is another way of stating the proposition that when retainer costs are of the nature of time-depreciation of fixed assets, such depreciation does not enter into determination of output, or of price.[1]

[1] The distinction between time-depreciation and use-depreciation has been deftly made by J. S. Bain, in "Depression Pricing and the Depreciation Function," *Quarterly Journal of Economics*, Vol. 51, 1937, p. 204. He makes the point that they cannot be added—which is a different point to ours, that they *should* not be added.

Bain's depreciation function depends on two variables, the passage of time and the use of the equipment. The partial functions with respect to each variable are the time-depreciation function and the use-depreciation function.

It might be thought that if the total function (user cost *plus* retainer cost) were greater than the net revenue, though user cost alone were not, the above conclusion would not hold. But this cannot be so. For if there were some other alternative to producing (for example, if it would pay to wait, retaining the asset unused), the user cost by itself would be greater than the current net revenue. An enterprise in this situation is in the helpless position of owning property rapidly falling in value; it can only choose that rate of output which minimises losses by continually maximising the (falling-over-time) present value of the enterprise.[1] The ownership of capital may thus be a continuing cost, as time proceeds, at any rate of use, and even when there is no use. For example, a rent-controlled residence will have a zero user cost to the owner, since every other tenant will pay the same rent. Yet, over time, the house will fall in value at a greater rate than rents are accrued. Again, a young forest may have a *negative* user cost over some rates of output (for thinning and pruning) and at the same time a *negative* retainer cost suggesting that there is also an annual increase in value due to natural growth.

One possible misunderstanding concerns obsolescent assets. It might be thought that if value were falling, due, for example, to a change in fashion, it would pay to use the asset as quickly as possible, and that retainer costs, showing this rate of time-depreciation, should therefore enter into the determination of current output. The answer to this is that output will be at the rate determined by marginal current outlay and marginal revenue,

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They cannot, of course, be added; they must be taken simultaneously, with the correct value for each variable.

The difficulties with this way of looking at depreciation are that *marginal* user cost becomes obscured by total depreciation, it is difficult to discuss *negative* user cost, and it treats user cost as an independent function of use, whereas our own treatment regards user cost as in no sense an independent function, but one which depends upon the age of the machinery, the outside market for it and so on.

Bain's treatment attaches special significance to that output where user cost first exceeds retainer cost (to use our vocabulary) which he calls the "critical output." As long as user cost is less than retainer costs, it has no effect on current output. This is probably correct in Bain's system. But the important thing is that the loss of value due to use can have an effect on output no matter how small it is, for it is *marginal* user cost which is important, and any system of definitions which obscures this relationship is capable of improvement. In fact, it is difficult to see that the value of retainer cost, no matter how defined, can have any effect on output at all, unless the passage of time increases or decreases the user cost—it is through user cost that it makes its effect. It therefore follows that user cost and retainer cost, defined to exclude one another, are more useful tools than an all-enveloping depreciation function.

[1] In Diagram III the curve UC' might be a sum of user cost curve UC and a retainer cost R.

having regard to outside uses. The fact that the asset is soon to wither cannot increase current net revenues in any period. In terms of user cost, Lewis has shown that user cost (iii) is that net revenue possible in the $(n + 1)$th use—the first use, say, after the date of becoming obsolete. Then if there are no outside opportunities, and this net revenue is very small, it is likely that current user costs will fall as the rate of output increases, which, since marginal user cost is negative, will indeed tend to increase the rate of current output. Thus user cost, not retainer cost, influences the rate of use of an obsolescent asset.[1]

Another possible misunderstanding concerns the fourth user cost suggested in Part III, the difference between the outside price obtainable next year after a year's use and the price that can be obtained next year after a year's idleness. We showed there in a footnote that this is a special case of the second user cost (difference between scrap values when used for one period) special in its allowance for passage of time. If, of course, external circumstances during that time were to alter, then the user cost would only be what the entrepreneur reckoned it to be on the basis of expected values. If these were changing regularly over the year, then, as shown above, the different values available after a lapse of time would show up *either* in user cost (iii) or, if there were a continual increase in value, in retainer cost.

As has been several times suggested, the present user-cost function is a subjective concept, depending on individual expectations of prices, sales, costs and production functions. Its statistical measurement, therefore, is unlikely to produce convincing results. We can say, however, that managers and employees may have a vested interest in finding that marginal user cost is rising over current rates of output. Professor Paish has published his suspicions that this is so in the gold-mining industry of South Africa, and Mr. Bauer that it was also true of the rubber-estate managers of Malaya.[2] One cannot resist suspecting that public employees charged with fighting soil erosion, forest destruction and fisheries' depletion are also tempted to over-estimate

[1] Retainer costs of some durable machinery, the type which is often "written off" by its owners years before it is scrapped, are often very small. This permanence does not cause a slow rate of use, since the rate is determined only by current marginal net revenue and marginal user costs. In the same way, rapid "writing off" of retainer costs should not lead to accelerated use.

[2] Cf. F. W. Paish, "Causes of Changes in Gold Supply," *Economica*, Vol. 5, 1938, p. 396, and P. T. Bauer, "Notes on Costs," *Economica*, Vol. 12, 1945, pp. 90 ff. See also A. E. Bunce, *Economics of Soil Conservation*, 1945, Chaps. 6 and 7, for a study of the costs of reducing the fertility and destroying the structure of the soil.

the marginal user costs of high rates of exploitation. High user costs might be attributed also by producers, whose high production was having the effect of low prices, to high output, when it is really desired to restrict production and sales.[1] User cost seems a useful method of analysing these influences. The conflict between social time preference and social user costs may also prove a workable method of analysing the public attitude to the maintenance of social capital.

But, as mentioned at the beginning of this paper, the obscurity imparted to future values by changing business and technical conditions makes user cost too fine a tool for the entrepreneur. Such fine calculation cannot be used when data are based on hopes and guesses. The economist, however, applying user cost to typical, or aggregate, situations may find it an instrument well adapted to balancing actual and alternative net advantages. This study was originally undertaken as part of research into the conservation of natural resources. Here it may be found that the conflict between "social time preference" and "social user costs" in the exploitation of natural resources is the best unifying view of the different ideas on forest destruction, the coal question and the international whaling disputes.

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[1] The user cost of output with particular reference to expected changes in demand is discussed by W. R. Pabst, Jr., "Unstable Conditions of Competition and Monopoly in Exhaustible Resource Industries," *Journal of Political Economy* Vol. 50, 1942, p. 739

WAGE CLAIMS AND THE PACE OF INFLATION (1948–51) [1]

I

THE theory of income determination can be applied quite readily to an inflationary situation as well as to one of under-employment. By making a very simple assumption, viz., that the rate of change in money income is proportional to the rate of change in prices, it is possible to build a useful model of the inflationary process. However, the simple income equations of Keynesian analysis only manifest one causal factor in this process. The general level of prices, which increases as money incomes increases beyond the point where aggregate demand exceeds aggregate supply at full-employment output, is a resultant of the process of income determination. The model becomes much more complicated if the price level is itself a governing variable,[2] as indeed it is when claims for wage increases are based on changes in that level. In some models,[3] in view of the powerful position of trade unions in post-war economies and the willingness of employers to grant wage increases in order to hold their labour force, it is assumed that all wage claims are met. If this is so, the stage is set for a "wage–price" spiral. Increases in wages will lead to increases in the level of aggregate consumption, and this, given no changes in the level of output, will increase the general level of prices, which in turn will engender further wage claims; and so on.

Attempts have been made to refine the static theory of income determination by the use of difference equations in which time-lags have to be assumed. The "Robertsonian lag" is a well-known instance. Thus fluctuations in the level of income (and by implication of output and employment) are mitigated by the introduction of a spending lag, so that consumption expenditure depends on income received in past "periods." The calculation of the length of these various lags is thus a useful concomitant

[1] We are indebted to Mr. C. Archibald and latterly to Mr. P. Browning of the Economics Research Division, London School of Economics, for assistance in the compilation of the statistics in this paper. Part II of this article is based on an earlier draft which appeared in the *Manchester Guardian*, May 15, 1952.

[2] For a model of this nature, see G. A. Bishop, "A Note on Overinvestment Theory of the Cycle" (*American Economic Review*, March 1951).

[3] Notably that of Bent Hansen in his *Studies in the Theory of Inflation* (George Allen and Unwin, 1951), Chapter 2.

to the development of theoretical models, as is found, for instance, in the work of Metzler.[1]

A model of the inflationary process would thus be incomplete without some consideration of the pace at which this process developed; and the rate of increase in prices is intimately related to the time taken for one complete convolution of the wage-price spiral. If *all* money incomes varied directly and immediately with changes in the index number of retail prices, and if all businesses passed on immediately to consumers the full increases in their money costs, then a small adverse movement, of say, the terms of trade could lead to the rapid and complete disappearance of the value of the pound. The longer is the time taken for a cost-of-living increase to be reflected in higher money wages, and the longer is the time taken for the concomitant increase in costs to be passed on to consumers in higher prices, the more gently will prices rise, and conversely.

Metzler, in examining the state of the economy in terms of income movements, is led to consider three lags—the " Robertsonian " or income-spending lag which we have already mentioned, the " Lundberg " lag or lag of output behind sales and lastly the lag of income behind the increases in output. In considering the state of the economy in inflationary conditions, we are more interested in price movements, and it is convenient to consider two lags—that between increases in prices and the wage increases they engender and that between wage increases and the ensuing price increases. These roughly correspond to Metzler's first and third lags, for in inflationary conditions, in the short run at least, output is relatively fixed (and thus his second lag is zero). However, so far as his third lag is concerned, we are more interested, of course, in wage changes rather than profit and dividend changes.

In this article we shall attempt to provide a rough measure of the length of the first of these lags which are of interest in the inflationary model, *i.e.*, the lag between price increases and wage increases. We shall study the conditions in the British economy from 1948 to 1951.

We shall assume that claims for increased wages are induced only by actual, realised price changes, and not by expectations of price changes. This assumption is not an unreasonable one for the period 1948–51, but recent wage claims suggest that it would be less valid at the present time.

[1] Lloyd A. Metzler, " Three lags in the Circular Flow of Income " (*Income, Employment and Public Policy, Essays in Honor of Alvin Hansen*, W. W. Norton and Co. Inc., New York, 1948).

II

The length of time which elapses between an increase in prices and the resultant wage increases has four constituents, each of which is affected by different influences. The first constituent is the time which elapses between an increase in the prices being charged in the shops, and the increase in the Interim Index of Retail Prices, for the statements made by trade-union officials suggest that it is the behaviour of this Index which determines the timing and magnitude of wage claims. This lag can vary between one month and two months: the index number for April, for example, is calculated from data collected in the middle of April, and is published about the middle of the following month. Any increase in prices after the data are collected will not be reflected in the index number until the computation for May, the results of which will only appear in the middle of June.

The second constituent is the time-lag between an increase in the Interim Index and the presentation of claims for increased wages. The pronouncements of trade unionists are almost unanimous in giving cost-of-living increases as the reason for claims for higher wages. Nevertheless, an appreciable increase in the Index, which is neither seasonal nor accidental, seems to be required to generate a claim for increased wages: an examination of the rise in the Index between a wage settlement and the presentation of the next wage claim for six major unions suggests that since the end of the war, it required on the average a 5-point rise to generate a new claim. A detailed study, however, of the number of claims presented each month between January 1948 and September 1951 shows no significant lagged or unlagged correlation either with the actual changes or with the rate of change in the Interim Index during the previous months. But this does not sever the nexus between cost-of-living changes and the timing of wage demands, for institutional factors are here of prime importance. In some cases the agitation for higher wages begins in the local lodges of the union; in others the claim for an increase begins with the union executive—and the time taken for the claim to be presented varies accordingly. Many of the major unions hold their annual conferences in May and June, and the determination to press for wage increases is then recognised and formally approved. The actual claim is usually presented in the following autumn or winter. The available information shows a seasonal concentration of claims in September, October and November each year, with less important concentrations in March and June. Finally, the willing-

ness of the unions to press for higher wages may have been influenced by the White Paper of February 1948, which set out the necessity for restraint. Certainly, the end of the "wage-freeze" can be clearly seen in the sharp increase in the number of claims presented in September and October 1950. The limits to the time which may elapse between an increase in the Interim Index and the presentation of claims for higher wages are, therefore, nebulous.

Once a claim for an increase in wages has been presented, there follow the negotiations with employers. The varying importance of different claims, and the different procedures which the different methods of collective bargaining involve, make it well-nigh impossible to discover any typical period which must elapse between the first presentation of a claim and the date of its final settlement. A study of a sample of 430 claims for increases in wages between the beginning of 1948 and the end of September 1951, made by workers in all industrial groupings, shows that in no instance did more than twelve months elapse before their settlement. The length of this lag for individual claims shows no significant correlation either with the magnitude of the wage increase that is asked for or with the numbers of workers on whose behalf the claim is made. The unweighted average lag for all claims over the whole of this period was about four months. The average time-lag for claims made in 1948 was rather over four months, for claims made in 1949 it was about four and a half months; in the first half of 1950 it was slightly over four months, but had fallen to about three months in the latter half of that year, at which level it remained during the first half of 1951. The reduction in the average towards the end of the period may reflect the end of the policy of wage restraint. It may be, however, that the changing relation between what the workers asked for and what they finally accepted is, in part, explained by the effects of this "policy." In 1948 the workers received on the average about one-half of what they claimed; in 1949 this had fallen to about 40%. During 1950 and the first nine months of 1951, however, the settlements were, on the average, 70% of claims. These figures mask significant variations between different industrial groupings—some examples are appended in the table on the opposite page.

The fourth constituent is the time which elapses between an agreement to increase wages and the date from which the increase becomes effective. The increased wage is seldom made retrospective for more than two months, nor do workers ever have to

The Lag between the Presentation and Settlement of Wage-claims in Selected Industrial Groupings

Industry.	1948. Average lag, months. 1st 6 mths. (a)	1948. Average lag, months. 2nd 6 mths. (b)	1948. Settlement as % of claim. (c)	1949. (a)	1949. (b)	1949. (c)	1950. (a)	1950. (b)	1950. (c)	1951. (a)	1951. (b)	1951. (c)	Average lag for whole period. A	Settlement as % of claim for whole period. B
Chemicals, brick, pottery and glass	2·0	3·0	38	3·0	3½	53	2·0	3·0	55	3·0	1·0	55	2·7	50
Engineering, shipbuilding	7·7	5·6	47	4·5	6·1	52	10·5	2·0	80	2·4	—	59	5·5	52
Mining and quarrying	6·0	4·5	58	4·0	6·3	27	4·7	2·2	43	2·0	1·0	68	3·9	46
National and local government	4·0	7·3	36	6·4	9·1	37	6·6	5·3	82	3·0	1·0	92	5·9	64
Textiles	2·6	2·0	52	4·8	5·0	36	3·6	2·0	55	1·6	—	55	3·3	46
All industries	4·4	4·0	52	3·9	5·1	37	4·2	3·0	68	3·0	1·0	67	3·9	55

1. All claims are national claims, in the sense that they were made on behalf of all workers with a particular skill or doing a particular job. The number of workers affected varies, of course, widely from one claim to another.

2. All claims were such as to result in an increase in the effective wage-rate, if granted. Claims for a shortening of the working-week, or for an increase in holidays, without any change in remuneration, are therefore included.

wait much more than two months after a settlement for the increase to take effect. It seems not unreasonable to conclude that this time-lag is, on the average, zero.

Since the beginning of 1948 until September last year, it would seem, therefore, that the average time which has elapsed before an increase in the prices paid for the major goods of everyday consumption was at least partially reflected in an increase in the wages being paid to workers was about six to seven months plus the unknown lag between the rise in the Index and the presentation of claims. The most important single determinant of the length of this lag was probably trade-union organisation, policy and procedure. The existence of a lag in wage-adjustment means that wage-earners are accepting for a time some reduction in their real incomes and to that extent contributing to a slowing down in the pace of inflation. The equivalent lag for those who earn salaries or who subsist on pensions is, of course, much longer.

III

So far we have considered only claims presented through the ordinary channels of collective bargaining. But we have still to consider industries in which wage claims are based on the cost-of-living index, *i.e.*, where sliding-scale agreements are in force. These agreements cover a wide variety of industries, notably iron

and steel trades, building and contracting, textiles and more recently printing, and cover some 2 million workers (September 1951 figure).

At first glance it might be thought that where sliding-scale agreements are in force the lag would be effectively reduced to zero, and that the pace of inflation would be accelerated in proportion to the number of workers affected. In fact, agreements of this sort differ appreciably. The differences depend on two factors: (*a*) the number of points the Interim Index of Retail Prices must rise before wages are reviewed at all; and (*b*) the frequency with which reviews of wages take place. We can thus classify sliding-scale agreements according to the number of points variation in the Index and the periodicity of review, and this will give some preliminary indication of the effect of these two factors on the speed of wage-adjustment.

Classification of Sliding Scale Agreements

Points variation.	Automatic.	Alternate months.	Quarterly review.	Four-monthly review.	Six-monthly review.	Annual review.	Total.
1	8	—	4	1	2	—	15
1 or 2	—	—	1	—	—	—	1
2	1	—	1	—	—	—	2
2 or 3	1	—	—	—	—	—	1
3	1	—	6	—	—	3	10
3½	—	—	—	—	1	—	1
4	3	1	—	—	—	—	4
5	5	—	2	—	—	1	8
6	1	—	1	—	—	—	2
8	1	—	—	—	—	—	1
10	2	—	—	—	—	—	2
	23	1	15	1	3	4	47

This table is based on a sample of forty-seven such agreements in force in September 1951. It is observed that in half the sample automatic adjustment takes place, although only in eight cases is the adjustment made for a 1-point variation. In two-thirds of the remainder of agreements, the revision of wage-rates is subject to quarterly review, and there are one or two important cases where annual review is made. An example of the first case is provided by the district agreements in force in the iron and steel trades, in which automatic adjustments are made in the shift rates of production workers and the weekly rates of maintenance craftsmen for a 1-point variation in the index. In furniture and bedding manufacture wages are reviewed quarterly and revised following a 3-point variation in the index. The most important

example of the third case is that of building. Under an agreement made in January 1948 an annual review adjusts the bonus in accordance with the average figure of the Index over the previous twelve months subject to a 3-point variation in the Index.

We have noted that the normal lag is composed of four components. In the case of sliding-scale agreements, the number of lags is reduced to three. The first lag is the same—the time interval between the change in the Index and the publication of the change. The second lag consists of the time interval between the claim and settlement, for we assume that the claim is lodged as soon as the Index goes up by the crucial number of points, and so there is automatic adjustment. This time-lag is positive only when there is periodic review. The third lag is the time interval between the " settlement " and payment. Payment is normally made from the month following the publication of the Index, sometimes the month after. For instance, in the case of printing, where reviews are made bi-annually, reviews take place on the May and November figures in the Index, which are published in June and December, and wage-changes take effect on the first pay day in July or January.

The total time-lag between an increase in prices and the adjustment of wages in sliding-scale agreements is thus subject to considerable variation. The span of variation is from one month where there are 1-point variations and automatic reviews to thirteen months where there are annual reviews.

IV

So far, nothing has been said about the length of the lag between increases in wages or in other cost elements and consequent increases in the prices of final goods. In many industries the length of this lag is affected by price-control requirements. It may also be affected by accounting convention : if prices are commonly calculated on an original cost basis, then increases in wages and raw materials will result in higher prices only when the goods being sold actually embody the higher-priced service or material. It is hoped, however, to deal with this lag more fully in a later study.

V

It may be presumed that the data we have assembled and interpreted are of interest as economic history, as they relate to our first experience of wages policy in conditions of over-full employment. However, one might perhaps go farther and suggest that

the presence of a wages lag and some indication of its length is of great importance for any forecast of economic change.

Until comparatively recently the calculations of national income and expenditure in the Economic Surveys for a particular year were made on the basis of prices prevailing at the end of the previous year. It is one thing to plan on the basis of constant prices on the assumption that it is possible to remove inflationary pressure by, say, tax adjustments. It is quite another thing to portray a situation in national accounts where assumptions have to be made about price changes which will occur independently of government policy as, for example, import prices and wages and salaries movements. A model based on variable factor prices must therefore begin with some assumptions about the changes on the income side rather than on the expenditure side in order to obtain the relevant figure for gross national product, and these changes are associated with forecasts of import prices, wages and salaries and profits.

It is known that forecasts of probable movements of wages are now made,[1] and it is to be presumed that something equivalent to the type of analysis we have made would be useful. Thus some idea of likely changes might be obtained from data of negotiations for wage-changes impending and the previous results of similar negotiations both in respect of the delay in completion and the success of the wage bargain. Of course, the lag is not by any means synchronised with the planning period, and implied price increases resulting from the pressure of wage and salary increases on available output may be difficult to fix in future time, so that the forecast both of automatic wage-changes based on the cost-of-living index and the precise timing of the next round of claims within the planning period may present insuperable difficulties. These difficulties are no more formidable than those found in forecasting, say, capital investment, and if we must have forecasts, it is as well that we know what procedure to adopt. Thus the type of investigation which we have conducted may be useful as a framework for discussion of future wage-changes so that at least we are aware of what assumptions have to be made in forecasts of this sort.

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[1] See, for instance, E. F. Jackson's article "The Recent Use of Social Accounting in the United Kingdom" (*Income and Wealth*, Series I, p. 157).

The British Economy 1945–1950. Edited by G. D. N. Worswick and P. H. Ady. (Oxford: Clarendon Press, 1952. Pp. viii + 622. 35*s*.)

Mr. Worswick and Miss Ady, with the various Oxford colleagues whom they have recruited as contributors, have found a first-rate subject crying out for systematic study. If one is to judge from the critics, pretty well everything has gone wrong from 1945 onwards. What has in fact happened? What would a group of all-intelligent and all-powerful economists have done, had they found themselves obliged to re-live those years and make our economic policy afresh, with the advantage of all the added experience we now have?

It would be wrong to give the impression that this book is solely concerned with attempts to appraise and pass judgment. Indeed, it would seem clear that the first purpose of the authors has been to present a clear and, as far as possible, a dispassionate record of what did in fact happen. And even where a reader may find himself in possible disagreement with the author of a chapter, he will almost always find that he has been given the essential material to justify and support his agreement or disagreement. As a record and as a text-book it will be immensely valuable.

But having said that, I hope I may be forgiven if in a review I concentrate on the lessons and judgments. The first of them, I would suggest, emerges from Mr. Worswick's Introduction and the study by Mr. Dudley Seers of National Income, Production and Consumption which immediately follows it. In contrast to the tremendous oscillations of the inter-war years and to the years before 1914, the period since 1946 has been one of unbroken but erratic progress. Even 1947 showed increases in all the major indicators of economic change: personal expenditure at constant prices rose by 3% above that of 1946. And similarly 1949, so regarded, was a year of hesitation and not of retrogression. It is unfortunate that the authors set themselves the date of December 1950 as the end of the period to be covered, for an occasional phrase shows an unwarranted complacency which later events would have modified. Nevertheless, Mr. Worswick reminds us that the five years here recorded saw an expansion of 40% in industrial production and 77% in exports. At the same time, as Mr. Britton shows in the chapter on Agriculture, the net output

of agriculture, at constant prices, was raised by 1950–51 to 46% above the pre-war level.

Those were very considerable achievements, and anyone who criticises must never lose sight of them. But no one, I think, who was at all connected with the making of policy during those years would want to claim that in important respects we could not have done better. And here, I would suggest, is the weakness of the book to set against its strengths. By virtue of the fact that it is by many hands, it is no one's special responsibility to sum up and to appraise as a whole. Was the rise of prices, as measured by the London and Cambridge index (1938 = 100), from 148 in 1945 to 185 in 1950, and subsequently to 225 at the end of 1952, in any sense inevitable or independent of internal policy? Were the biennial exchange crises of 1947, 1949 and 1951 nothing about which to worry unduly? Were both these phenomena the results of trying to do too much too quickly? On these questions the reader will find information, rather thin and scattered, but none the less there. He will find relatively little in the way of judgments to help him make up his own mind. The book is, possibly by design, a little too neutral and dispassionate here for my taste. For I would have liked to know the verdict of this particular jury.

The essays which come nearest to answering my questions are those by Mr. Little on Fiscal Policy, Mr. Kennedy on Monetary Policy, Mr. Ward-Perkins on Banking Developments, Mr. Wilson on Manpower, and Mr. Worswick himself on Direct Controls and Personal Income Policy. But curiously there is no single and central discussion of investment policy, concerned to sort out the conflict of urgency, on the one hand, if production and export were to be stepped up, and danger, on the other, if inflation was to be avoided. And though Mr. Asa Briggs' chapter on the Social Services is one of the best things in the book, the right scale of housing investment is scarcely within his terms of reference and not obviously within that of any other chapter. I get no clear impression whether the authors would hold that if a little more had gone to consumption and a little less to investment, inflation would have been under better control.

Mr. Little's discussion of Fiscal Policy is admirably done, not least because he brings out most clearly the much greater difficulties of a Chancellor whose tasks are "the preservation of full employment and the avoidance of inflation"; to these he adds more diffidently "as rapid a redistribution of wealth as is consistent with both the former aims and a steady growth of the national income" and emphasises that the greatest difficulty is

"the combination of redistribution in a progressive economy with the avoidance of inflation." I was glad to see him give credit to Mr. Dalton for imposing the taxes in the emergency budget in the autumn of 1947 which helped us to get right in 1948. But in balancing the credit I thought he did a little less than justice to Sir Stafford Cripps, whose budget of 1948 established a model for the relating of fiscal policy to general economic policy in a peace-time world, comparable to that of Sir Kingsley Wood in 1941 in a war-time world.

Mr. Wilson's discussion of man-power goes, as it must, well outside the field of man-power policy, narrowly defined. For man-power redistribution is largely, he would say, a matter of creating a climate which is neither deflationary nor inflationary. He argues that the problem of the forties was the antithesis of the problem of the thirties: the danger was not shortage of effective demand but an inflationary pressure which made movement unnecessary and thereby discouraged the expansion of the exporting industries and of coal-mining; thus the chief and recurrent danger was insufficient exports to buy the imports necessary to keep the economy running full.

Mr. Wilson's argument spills over, inevitably, into the field of external policy, and there, as might be expected, he does not march strictly in step with the idiosyncratic Mr. Balogh. For Mr. Balogh, closer in political sympathy with the objectives of policy than many of the other authors, is in far less sympathy than any with the measures for its application. Indeed, the editor of the *Economist* could scarcely have penned a more vigorous indictment of British policy. Mr. Balogh's discussion of external policy is largely (I would say too largely) concerned with the termination of lend/lease, the Washington loan negotiations, the implications of the Bretton Woods plans, the premature restoration of convertibility in 1947 and other actions during the war or during the early months of the peace. I feel sorry that he has given far less attention to the almost equally important later issues, and in particular to the attempts to liberalise trade and to steer us towards convertibility after 1948. For I would have liked to have seen him argue in more detail the difficulties of operating a fully liberal system in a world desperately short of monetary reserves and in which the important structural adaptations, with new propensities everywhere to import and export, were only slowly evolving as new capital investment affected elasticities of supply. It is arguable that we managed to have the worst of both worlds: that we were insufficiently ruthless and insufficiently

endowed with reserves to follow a whole-hogging liberal programme, which might have brought us through acutely painful processes of adjustment to some sort of a new set-up; that we were insufficiently determined to maintain in the face of liberal criticism the controls which would have held the situation while we pushed through the investment and redistribution of resources that were a preliminary to relatively painless decontrol.

A Table in Mr. Balogh's chapter serves to bring home the very formidable costs of our post-war foreign policy. In the six years 1946–51 we spent over £1,500 million abroad by way of military, administrative, relief and occupation expenditures. When one also remembers that our current expenditure on defence, at home as well as abroad, is nearly twice our net capital investment, a tremendously important ingredient of our economic difficulties is at once apparent; together they have contributed greatly to the forces making for overseas deficit and internal inflation. It is very far from clear that greater economic strength might not have enabled us to achieve political objectives with less expenditure and less humiliation.

Mr. Balogh's more central chapter is followed by two excellent chapters entitled Britain and Europe and Britain and the Sterling Area by Mr. Sargent. The first of these brings out with greater clarity than any other short discussion I know some of the difficulties and problems that we have had to face in liberating European trade consistently with safeguarding ourselves and the Sterling Area against too easy a dissipation of our dollar balances. The chapter on the Sterling Area contains, *inter alia*, a convenient and simple statement of the complicated hierarchy of British Exchange Control, as well as a good account of some of the anomalies inside the Sterling Area. Finally, Miss Ady provides a workman-like account of overseas development, of the extent and importance of bulk purchases and long-term contracts and of the various development agencies under the Colonial Office, the Colombo Plan and the like.

I have done far less than justice to parts of the book which I have not mentioned, where Messrs. Leyland, Clegg and Henderson and Mrs. Hall discuss industrial organisation and monopoly control, Mr. Chester discusses the machinery of government and Professor Fogarty location policy. Each of these has points of interest and importance, and together they give substance and reality to the whole discussion.

If we had had all these authors as Ministers and Permanent Secretaries what would have been done differently? Mr. Balogh

would have negotiated much more toughly with the Americans. I wonder whether he would have come home empty handed, and whether his government would have survived to implement the necessary measures of austerity and unemployment. Had he succeeded we would have had seven lean years behind us, but with more than a possibility of seven correspondingly fatter years in front of us. Mr. Wilson would have run bigger risks with full employment; I rather suspect that Mr. Worswick and Mr. Dudley Seers would have been hesitant about his policies. Mr. Wiles leaves me a little uncertain whether he thinks that the bonfire of controls set fire to the thatch of the house. But with one pronouncement, at least, by Mr. Little I find myself in wholehearted agreement, though I doubt whether it forms a very suitable text for the Cabinet Room: "Economic problems, being problems of choice, are, of course, always insoluble."

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Lessons of the British War Economy. Edited by D. N. CHESTER. (London: Cambridge University Press, 1951. Pp. xii + 260. 22*s.* 6*d.*)

Studies in War Economics. Prepared at the Oxford University Institute of Statistics. (Oxford: Basil Blackwell, 1947. Pp. viii + 410. 25*s.*)

JUST what are the "lessons" in the volume of essays edited by Mr. D. N. Chester is not clear. Most of Mr. Chester's fellow "temporaries" in the war-time Civil Service are concerned in summing up their experiences from the point of view of war-making. But Professor G. C. Allen, writing on the concentration of production, has pertinent remarks to make on the general issue of state intervention in industry and the division of decision-making between central authority and private business; Messrs. Chester and G. D. A. MacDougall, the one on the Economic Section of the Cabinet Secretariat and the other on the Prime Minister's Statistical Branch, both comment at large on the role of the economic expert attached to the non-departmental Minister; and Mr. Richard Stone, in an essay on the development of national income estimates, looks confidently out on a future of peaceful international social accounting scholarship.

Regarding lessons of war, moreover, there are many distinctions of style. Mr. W. B. Reddaway contributes a wholly

general essay, an admirable one, on the modern theory and practice of rationing. Professor E. Devons, though plainly describing an experience, discusses the co-ordination of aircraft production as a generalised problem. And Professor P. Ford, on timber allocation, has an economist's eye for seeing the problems of timber as a case study in the supersession of the free market by administrative controls. The other authors, however, are more chronologically minded in their accounts of their experiences, and draw conclusions to a varying extent. Professor E. F. Nash and the late A. W. Menzies-Kitchin, the one on food and agricultural prices and the other on local agricultural policy, provide accounts which are historical to the point of discussing, not the technique of policy-making and implementation, but the merits of policy itself. Mr. Hugh Weeks, on the other hand, though his essay undoubtedly describes what happened in Anglo-American supply relationships, draws conclusions regarding the character of international negotiations which provide interesting comparison with Mr. Chester's comments on "the Whitehall machine", with Professor Ian Bowen's observations on the loss and subsequent recovery of position of the permanent Civil Servants in a war-expanded Ministry of Works, and with Professor Devons's unvarnished discussion of internal relations within a production department.

One sympathises with Mr. Chester as editor for not trying to sum up the collective wisdom of these thirteen pieces. The theme of the majority is the technique of producing for war, and any summing-up of experience would have, for the most part, to concern itself with that. But there are other things. War finance is isolated in Mr. Stone's essay, but the administrative problems of maintaining home civil supplies, important but frequently overlooked, are here given their full weight in Mr. Reddaway's essay, in Professor Ford's and most of all in a gem by Professor Richard Pares on the work of a departmental priority officer, which combines circumstantial detail with a penetrative, and in places critical, understanding.

In the twin processes of planning and implementation which constitute war-time administration, though there were some economists engaged in such worldly affairs as labour supply and shipping control, most were to be found at the planning end of the productive process, where a practised hand with statistics and an appreciation of the relevance of opportunity costs were primary qualifications. These essays reflect that concentration, and the one that comes nearest to being a key to the remainder, therefore, is that by Professor E. A. G. Robinson on the overall allocation of

resources. Professor Robinson puts the man-power allocations at the centre of his theme, and this is surely correct. It is true, as another essayist writes, that each authority might have known a little more than it did about what the others were doing, and that the Ministry of Labour in particular might have taken more interest in the allocation of materials. Nevertheless, man-power provided the most sensible yardstick by which to measure up the resources of the economy. Labour, frequently the shortest factor, was the most easily understood by Ministers as signifying real resources; once Mr. Bevin had taken charge, it was under powerful control; and there was a readily available machine for collecting the statistics of its distribution and movement. One misses from this group of essays one written from within the Ministry of Labour, but more surprising is Mr. Chester's omission of the Manpower Committee in his discussion of the central machinery for economic policy. His simple division of economic functions between the Lord President's Committee and the Ministry of Production disregards the independence of the Ministry of Labour from the latter and also omits what, perhaps, was the most impressive element of all in the position acquired by Sir John Anderson (now Lord Waverley): that whereas in other fields, the Lord President's Committee grew with the Lord President, Sir John's authority over the allocation of man-power remained his personal property and travelled with him when he became Chancellor of the Exchequer.

As Professor Robinson remarks, "it was in the field of man-power policy that the problems of military operations, of munitions output, of civil standards and of the control of inflation all came together and demanded simultaneous solution," and from his discussion of man-power allocations, one may move to one or other second stages. One may consider the techniques of resource control, comparing Professor Ford on timber, where the control of supply was simple but demand a matter of innumerable uses, with Professor Bowen on building, where the uses were more easily enumerated but where supply points were many and scattered. Or, alternatively, one may go on to consider the programming of production, comparing Professor Pares's embarrassment of claims from many types of civil production, and no co-ordination between them, with Professor Devons, concentrating on the one product of aircraft but with an immense problem of fitting together plans for final aircraft, components and spares.

Programmes must be endorsed, however, and recommendations backed, and the achievement of this stage required, as the essays

show, a subtle combination of authority and influence, often with less of the former than of the latter, and with the latter itself fluctuating with the fortunes of Ministers, the interests of official heads and the sympathy and like-mindedness of executants in other departments or sections of a Ministry. On this subject, we see the similarities in the experience of relationships between programming departments and chief executives recorded by Professors Devons and Bowen, and also note echoes of the same theme in Mr. Chester's observations on the place of an Economic Section in the administrative process.

Finally, to make plans and programmes one must have knowledge of what is going on and of what lies ahead. As regards industry itself, this is first and foremost a matter of statistics. The supersession of the price system by administrative direction meant statistical returns and statistical controls, a matter here seen at its most formidable in the cases of timber and building, both industries which, before the war, had relied upon market movements to govern their activities, with little organised information recorded. Turning inward to the Whitehall machine or the individual government department, on the other hand, we find that the need for qualitative information about policies may be more important than quantitative records. Both Mr. Chester and Professor Devons have pertinent comments on how such information is acquired. Mr. Chester, working on the high-policy level, sees " the close personal contact which existed between a small number of Ministers and the Civil Servants—permanents and temporaries " as the most effective method of communication. Professor Devons, living in the harsher world of aircraft production speaks bluntly of spying, of getting disgruntled members of another staff to " spill the beans," and of making the acquaintance and friendship of sympathetic minds " not over-sensitive about the prestige of their own directorate."

Professor Devons perceives the danger, in such a complex world as that with which he had to deal, of having too much information : " although adequate statistics were necessary, it was the limitation in the number of interrelated variables that could be comprehended by one brain that was the effective limiting factor." For most purposes, however, a surfeit of information was less to be feared than a lack. It was the inability to answer the *simple* questions quantitatively that was so often irritating. A Lord Cherwell with a flair for orders of magnitude may be, as Mr. MacDougall insists, a valuable assistant to a Prime Minister who demands to know orders of magnitude before taking decisions.

But a flair may be little more than a disguise for prejudice if there is insufficient statistical material to provide it with a discipline. The Prime Minister's statistical branch, of course, was building up its own statistical records before the Central Statistical Office was brought fully into being. But one must sympathise with Professor Robinson's complaints that there had been "nothing like sufficient background study in peace-time of the economic problems and limitations of conducting a total war," and that, throughout the war, attempts at forecasting were never for more than comparatively short periods ahead. Attempts at national income forecasting were made in the later war years when reconstruction questions were asked, but, surprisingly, these are omitted from Mr. Stone's story, and his discussion of the longer-term scope of income estimates omits forecasting problems.

Statistics bothered the war-time members of the Oxford Institute as well as the inhabitants of Whitehall. To their keenness to discover new statistics relating to the war economy was added the handicap that so many of the known official figures were suppressed during the war on grounds of security. Some of their energy did not avoid the dubious occupation of trying indirectly to derive these secret figures, but other work, as the collected papers published in 1947 show, was of a more generally useful character. The periodic comments on inflation and the budgetary problem by Dr. Kalecki, a number of which are included in this volume, though somewhat ahead of their time in their insistence on comprehensive rationing and price stabilisation through subsidies, and often more radical in political tone than the comments of the financial journalists, did not greatly differ in analysis from what we have now come to take for granted. Likewise, the discussions on consumer rationing and price control, in which the name of Dr. Kalecki is also prominent, do not greatly differ in their essential substance from what Mr. Reddaway has since been able to say, more authoritatively, in *Lessons of the British War Economy*. Due credit must be given for the time at which such essays were written, when the same topics were being discussed and the same economic analysis was being applied—though with greater care over the administrative problems—within the secret confines of Whitehall, Horseferry Road and Colwyn Bay.

Indeed, it might be a general proposition that the articles in this book are of a high quality where their analytical content, economic or statistical, is large and low where administrative dicta dominate. Articles on rationing by Messrs. J. M. Nicholson

and G. D. N. Worswick are accepted contributions to a corpus of theoretical literature. Similarly, Mr. Nicholson's studies of wages and the distribution of labour and the efforts of Miss T. Schultz and others to elucidate standards of living in working-class households are a permanent memorial to academic research under difficult conditions. On the other hand, the comments of onlookers in regard to such topics as war production, the concentration of industry, and regional board organisation must necessarily seem light-weight now and probably always were. How much more there was both of sympathy and penetration in the contemporary observations—but to a privileged audience—made by such as Mr. Chester's colleagues on these same topics!

There is an uneven distribution of worth-while ideas in the four hundred pages of *Studies in War Economics*. But, should another war occur, there will be some lessons to be found therein as well as in the more authoritative volume which Mr. Chester has edited.

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A Theory of Price Control. By J. K. GALBRAITH. (Harvard University Press (London: Geoffrey Cumberlege), 1952. Pp. vii + 81. 10*s.* 6*d.*)

AT the beginning of the last war when controls over prices were being introduced, economists were generally sceptical of their efficacy, partly on theoretical grounds and partly because experience seemed to show that such controls had been futile. Nevertheless, most governments during the war, and some of them since, continued to regard price control as "an important instrument of stabilisation policy," and their view was not unjustified by events. So Professor Galbraith was led to inquire into the reasons for the "unexpected workability" of price control, and his little book is a realistic and lucid contribution to this subject. According to his argument, the pre-war estimate of the futility of price control rested upon the assumption of competitive markets. In such markets price control indeed proved to be ineffective, except when accompanied by rationing, but in those large sectors of the economy where imperfect markets are usual, price control, even without rationing, went far towards justifying itself. This was for several reasons. In imperfect markets prices and margins anyhow tend to be inflexible and conventional; enforcement is comparatively easy when the

number of producers in each trade is few; and this fewness makes it possible for the government to negotiate with the producers about the supply to be forthcoming at the controlled price. Furthermore, price movements depend upon expectations, and control may affect expectations so as to restrain anticipatory buying. But, since price control necessarily helps to produce an aggregate of monetary demand in excess of the supply of goods and services, is it not likely that this success will be short-lived? The answer, of course, depends upon whether the volume of current savings is adequate, and Professor Galbraith concludes that war-time price control in practice was an important proximate cause of the increased saving needed to satisfy this condition. There are clearly limits to the volume of saving that can be expected even in war-time conditions, and the "disequilibrium system" (to use his own term) will work only if the "margin of tolerance" (that is, "the volume of demand in excess of current supply that . . . is consistent with additions to aggregate output") fits the circumstances in which the policy is being practised.

As long as the margin of tolerance (whatever it may be) is not exhausted, then price control may be expected to enjoy a measure of success. But the margin of tolerance may shrink, and the scope of any future price-control policy may be narrowed, if experience convinces the public that inflationary conditions are likely to persist. Thus, during the war the margin of tolerance was wide in the United States, largely because of the confidence that American prices would fall when peace came. In Germany, on the other hand, with memories of the inflation of the twenties, the margin of tolerance was very narrow.

It is sometimes argued that suppressed inflation is attended by dangers that are as serious as, though different from, those that accompany an open inflation. Professor Galbraith disagrees with this view, and he states the familiar argument that, with an effective control over prices, the interaction of wages and prices may be prevented from becoming an accelerant of the inflationary process. The alternative policy of attempting, *under conditions of full mobilisation*, to curb inflation by heavy taxation means that the government deprives itself of the possibility of using "the incentive value of money claims to be held for later expenditure." Under conditions of *partial* mobilisation, such as the present, when there are many alternative outlets for expenditure, and when there is no terminal date to that mobilisation, the margin of tolerance narrows, and monetary and fiscal

measures are therefore called upon to play a much more important part than in war-time.

Although Professor Galbraith has written in the light of American experience, what he says has relevance to price-control policy as followed in this country. It might be pointed out, however, that in Great Britain some of the problems that attended price control in markets where there were numerous sellers and where the identification of goods was difficult (as in clothing) were solved by the " utility " schemes fortified by purchase tax on the non-utility lines. These arrangements enabled the area of reasonably effective price control to be considerably extended in this country. British experience also suggests that Professor Galbraith's distinction between the categories of goods where the control was effective, and those where it was ineffective, is too clear-cut. There were, in fact, many gradations. Moreover, the very concept of " effectiveness " in this context is not without ambiguity, especially as the purposes which price control was supposed to serve changed from time to time. Although we still lack a detailed study of one of the most important aspects of price control, namely its effects on the output of particular industries, anyone who now engages upon such inquiries will find his task made much easier by Professor Galbraith's stimulating essay.

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Essays in Economics. By A. C. PIGOU. (London : Macmillan, 1952. Pp. viii + 241. 15*s*.)

Utility and All That. By D. H. ROBERTSON. (London : Allen & Unwin, 1952. Pp. 207. 18*s*.)

Economic Essays. By R. F. HARROD. (London : Macmillan, 1952. Pp. xiv + 301. 18*s*.)

No one can read these three books of essays without being impressed by the amazing versatility of the older generation of economists. (I hope Mr. Harrod will forgive me for so classifying him !) Professor Pigou writes about subjects as different as Mill and the wages fund, over-employment, central planning, the inflationary gap. Professor Robertson embraces utility and interpersonal comparisons, the theory of interest, economic union, the future of banking. Mr. Harrod moves with equal skill and grace in problems of population, the theory of duopoly, the field of

dynamic theory and the appraisal of Professor Hayek's brand of individualism. In these days of increasing specialism, when too many of us are afraid to open our mouths outside an exceedingly narrow branch of expertise, is there not something to be learned from contemplating these volumes? Are their writers less expert than the specialists? Surely not. Are we not losing more by failing to see economics as the unity which it undoubtedly is, and must be, than we are gaining from our divisions of labour?

Professor Pigou's volume brings together eighteen articles, all written since 1939 and most of them since our paradoxical regulations ruled him too senile to educate the young. They begin with the charming Presidential Address that he gave to the Royal Economic Society comparing the economics and the economists of the present with those of his own younger days. They include his Stamp Memorial Lecture on "Wage Statistics and Wage Policy," a paper on "Men's and Women's Wages" based on a memorandum prepared for the Royal Commission on Equal Pay, and a number of articles from various Bank Reviews on topical problems, as well as several which have appeared in this JOURNAL. He has added two or three articles which have not been previously printed. These include one on the "value" of different kinds of transfer payments inspired by the recent book of Messrs. Rowntree and Lavers, a study, written in 1951, of the inflationary gap and another, written in the spring of 1952, on the gold and dollar reserve.

Professor Robertson's collection equally contains a number of familiar friends; indeed, in his case they have all, I think, appeared before. He divides his sixteen essays into four groups. The first, beginning with "Utility and all That" is concerned with the broader aspects of economic theory. It contains in addition his Presidential Address to the British Association and to the Royal Economic Society and his long review in the *Quarterly Journal of Economics* of the first *Survey of Contemporary Economics*, edited by Professor Howard Ellis. The second group is concerned with interest theory and investment policy, and includes the important paper "Some Notes on the Theory of Interest" from the John Williams' *festschrift*. The third group is composed of articles dealing with current economic policies and trends. Some of these are probably less well known, for they include a question-and-answer interview on the subject "Does Britain Face Collapse?" which appeared in the Melbourne *Argus* in February 1948, a broadcast in August 1948 on Western European Economic Union, a lecture given in Belgium and published in

Lloyds Bank Review in 1949 on " Britain and European Recovery " and a paper on " The Terms of Trade " given to the International Economic Association. The final group deals with monetary and kindred problems. " Is there a Future for Banking? " was addressed to the Lombard Association. " New Light on an Old Story " is a review of Professor Rostow's *British Economy of the Nineteenth Century*. " Stable Money " is a review of Lloyd Mints' *Monetary Policy for a Competitive Society*.

Mr. Harrod's collection covers a longer period of time, and indeed reprints much of the work that one most closely identifies with his name. It will be immensely valuable to have it all conveniently together. Like Professor Robertson, he divides his volume into four parts. The first, " Man-power," contains two memoranda which he contributed respectively to the Royal Commission on Population and the Royal Commission on Equal Pay. The second, " Competition," begins with the five articles from this Journal, " Notes on Supply," " The Law of Decreasing Costs," " A Further Note on Decreasing Costs," " The Equilibrium of Duopoly " and " Doctrines of Imperfect Competition " which represented contributions of exceptional importance to the discussions of the early thirties. There follow two new articles of very great interest, in which Mr. Harrod has reviewed the subsequent developments of the subject and has tried to relate this and other earlier work to more recent thinking. A third part, " Employment," deals with problems of Keynesian economics and of dynamic theory. The first of these articles, on " The Expansion of Credit in an Advancing Community," written before Keynes's *General Theory*, raises problems of the balance between saving and investment, but handles them, as Mr. Harrod is convinced they must be handled, in dynamic rather than static terms. The fourth part, " General," is made up exclusively of a discussion of Professor Hayek's Finlay Lecture, given in Dublin, on Individualism, True and False.

This volume would be immensely worth having if it contained nothing but the older and familiar papers. But it is the new discussion of imperfect competition and of profits which adds an exciting *hors d'œuvre*. This is important, in the first place, because Mr. Harrod has much that is exceedingly important to say about the older problems of the meaning of normal profits where there is an element of monopoly and of the existence or non-existence of excess capacity. But it is doubly important because he goes on to discuss the newer problem of the rightness or wrongness of using techniques of thinking about the actions and

decisions of businessmen which differ completely from the ways in which they think themselves, and the "full cost principle" in relation to this. I shall say no more than that I believe Mr. Harrod's discussion, together with Miss Brunner's article in *Economia Internazionale*, has done a very great deal to formulate the problems, to clarify the issues and to narrow the possible field of disagreement. Indeed, it would now seem to be increasingly clear that what in early presentations had seemed to be put forward as a meaningless but important ritual is in fact, as many of us had been inclined to think, a meaningful, rational and by no means inflexible ritual, perfectly appropriate to long-term profit maximisation in a significant range of conditions. I hope that Mr. Harrod will find time to elaborate his treatment of all this and to apply it to the multi-product firm. For many of these problems only become fully intelligible when the problem of the internal allocation of non-specific resources is introduced.

All these three volumes are of far more than ordinary interest and we must be grateful to both authors and publishers for making their contents much more readily available.

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Pricing and Equilibrium: an Introduction to Static and Dynamic Analysis. By ERICH SCHNEIDER. Translated by T. W. HUTCHISON. (Edinburgh: William Hodge, 1952. Pp. xii + 327. 25*s.*)

The Theory of the Market Economy. By HEINRICH VON STACKELBERG. Translated by A. T. PEACOCK. (Edinburgh: William Hodge, 1952. Pp. v + 238. 25*s.*)

THE contributions of Professors Schneider and Stackelberg to economic theory are well known in this country and a translation of their text-books is very welcome, especially when both authors are as well served by their translators as are these.

Professor Schneider's book is a remarkable achievement. In three long chapters and one short one he guides us surely and skilfully through the theory of individual decision taking ("The Economic Plan of the Household" and "The Economic Plan of the Firm") to a detailed analysis of general exchange equilibrium ("The Problem of Economic Equilibrium in a Closed Economy"). The treatment, with minor exceptions, is both rigorous and clear, illustrated as it is by numerous diagrams and

examples. The influence of Swedish economics, with its emphasis on plans, expectations and period analysis, is discernible throughout, and makes this text greatly superior to many now in use, where these matters are only discussed in footnotes if at all. Professor Samuelson's writings on the methodology of equilibrium analysis, on statics and dynamics, etc., are widely and wisely used, and are very neatly presented. Indeed, a great deal of recent work in micro-economics is put across with the maximum clarity and minimum pain.

Especially worthy of note is the second chapter on "The Economic Plan of the Firm." There can be few economists to-day who are satisfied with the current theory of the firm, but if this theory has to be taught to students, then Professor Schneider's chapter shows us the best way of teaching it. Starting with a short lucid classification of objectives, modes of behaviour and forms of markets based largely on the works of Frisch and Triffin, he leads us step by step through a most interesting hundred pages to a consideration of the theory of costs, equilibrium, stability, the cobweb theorem, investment and all the other paraphernalia of the modern theory of the firm. Nowhere does he lose sight of either the *ex ante* nature of decision-taking or the importance of conjectural elements in many important market situations. Dogmatism is everywhere eschewed and the limitations of the theoretical models carefully explained. The whole chapter is a model of clarity, and after reading it a student either understands this part of economic theory or, if not, should give up his study of economics altogether.

This, then, is a very good text-book indeed, and should be most useful to students in their second or third year. There are, however, two minor criticisms. In the chapter on household behaviour, the convexity of indifference curves is introduced as an assumption, rather than derived from the basic hypothesis of maximum utility. As is well known, this can be done on an elementary level by an index-number technique, a technique which Professor Schneider himself employs in discussing the demand for a factor of production (p. 152). Since diminishing marginal rate of substitution is one of the few theorems derivable from utility analysis, it seems a pity not to have done so.

The second criticism relates to Professor Schneider's discussion of general equilibrium. By demonstrating the interdependence of the economic system and bringing the various bits of theory together, he does a great service to the student, who is so frequently left wondering where all the theorising is leading to.

Unfortunately, however, the equations used, and the distinction between the demand for goods which depends on relative prices only and the demand for money (the quantity equations) which depends on absolute prices, incur all the objections which Patinkin and others have recently levied against the "classicals." One hopes that this will be rectified in later editions. The equation on p. 315, where the demand for *nominal* cash balances is written as a function of the rate of interest is surely a slip!

Professor Stackelberg's book is frankly disappointing. Knowing him to have been one of the champions of economic theory in Germany, one expected both a more up-to-date and more rigorous treatment of the topics covered, which are roughly the same as those dealt with by Professor Schneider. Moreover, for a text-book it lacks clarity and is in parts far too difficult.

The difficulties in reading the book are partly due to the huge amount of new (and unfamiliar) terminology, *e.g.*, saving quota = average propensity to save, isothope = isoquant, isotime = transformation curve, fungible = homogeneous, etc., and partly to the infrequency of diagrams (there are forty-seven, as compared with a hundred and thirty-eight in Schneider's book). It is, probably, not correct to assume that a student will be more frightened by the sight of a diagram accompanied with explanation than by a translation of mathematics into words.

The book is not up-to-date (not even up to say 1940), as is amply illustrated by the chapter on capital and interest which is based on Böhm Bawerk and takes little notice of either criticisms of the latter's work or of recent writings in interest theory, by the adherence to a rigid-quantity-equation approach, by the lack of reference to the works of Chamberlin or Keynes, and scant and insufficient reference to such authors as Joan Robinson, Triffin, Knight, Kaldor, Sweezy, Schneider and indeed almost everyone who has written on economic theory in the last thirty years outside Germany. We are assured, in his lucid introduction, by Mr. Peacock that Stackelberg was well acquainted with the work of these omitted authors, but there is little indication of this in the book. This, of course, does not mean that what Stackelberg has to say is necessarily uninteresting, but it does mean that his work is hardly suitable as a text-book.

The one modern work extensively utilised is Professor Hicks' *Value and Capital*, and it is perhaps over-utilised, as for instance in the lengthy discussion of the effect of a price change on the demand for a substitute of a complement. Moreover, clearly Stackelberg had not read the appendix at all carefully, since

diminishing marginal rate of substitution (here called " Gossen's second law ") is introduced as an empirical assumption, and the definition of substitutes and complements of factors of production and the analysis of factor-price changes is rather confused. Here again, the use of Mrs. Robinson's well-known theorem of the effect of a change in the price of one input on the demand for that of another, where substitution and expansion effects are clearly distinguished, would have been useful.

The book lacks rigour, since many proofs such as those of " Gossen's second law," the greater productivity of roundabout methods of production, time preference, diminishing marginal productivity, etc., are not proofs at all but instances of a particularly dangerous kind of special pleading. That is, Stackelberg appeals to more or less known facts and to intuition to justify particular abstract conclusions. Thus he appeals to " everyday experience " to justify the convexity of indifference curves, and on the basis of the abstract theory of consumers' choice reduces consumer behaviour *ad absurdum* if time preference is absent with a positive rate of interest. Present-day economic theory is hardly a unique explanation of observed facts.

Since Stackelberg was an important economist, his book is of interest to academic economists, although they will hardly learn from it. For the student, however, the advice is: " stick to Schneider."

F. H. HAHN

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Business Cycles and National Income. By ALVIN H. HANSEN. (New York: W. W. Norton, 1951 (London: Allen & Unwin). Pp. xv + 639. 55*s*.)

Business Cycles. By D. HAMBERG. (New York: The Macmillan Company, 1951. Pp. xviii + 621. 37*s*. 6*d*.)

Introduction to Business Cycles. By ASHER ACHINSTEIN. (New York: Thomas Y. Crowell. Pp. xvi + 496. $6.)

THESE three stout volumes from the United States all belong to that category of text-book-cum-treatise that is now seen—though not perhaps bought—increasingly frequently in this country. There is no denying that books of this type have considerable usefulness for the undergraduate student. At the same time it is difficult to conceive of any better way of concealing from the more advanced reader whatever original contributions to knowledge or fresh ideas on particular points their authors may have to communicate.

Professor Hansen's book is likely to be widely used as a textbook, and very satisfactory it is for that purpose. This is notwithstanding that the level of difficulty varies greatly from one part to another. The reader who became acquainted with the multiplier for the first time in Chapter 10 is likely to make heavy going of the distinguished essay by Dr. R. M. Goodwin on Econometrics in Business Cycle Analysis that appears as Chapter 22. Empirical students of business cycles will probably complain that Professor Hansen places overmuch reliance on large aggregates both in explanation and in description, but the frequent stress laid on technical innovations and "autonomous investment" serves as a valuable corrective against an overmechanistic attitude. Part II may be taken as one of the best and most up-to-date introductory expositions of Keynesian income analysis. The hoary old controversies about savings and investment are reduced to their proper perspective, and room is found to incorporate a full discussion of post-Keynesian notions about the consumption function and the relation between its cyclical and its secular behaviour. There is a useful brief historical survey in Part I. By taking this survey back to the Civil War, Professor Hansen is enabled to draw some interesting comparisons between the depressions of the 1870s and 1890s and that of the 1930s.

It is natural to compare the present book with Professor Hansen's earlier *Fiscal Policy and Business Cycles*, published in 1941. As the change in title indicates, the present book is less concerned with details of contracyclical fiscal policy; the stagnation thesis is also relegated very much to the background. Instead, some 200 pages are devoted to an historical survey of writings on business fluctuations since Lord Lauderdale. Much of this is familiar ground, though in Professor Hansen's skilful and lucid exposition it is by no means lacking in interest. It may be felt that in this survey something less than justice is done to empirical writers—for example, Tooke and Juglar, to say nothing of Marx—since in this field many of the best contributions were made by authors not in the main stream of classical theoretical political economy. Likewise, both the heading and the contents of the chapter entitled "Sequences, Leads and Lags: Wesley Mitchell" are likely to cause annoyance in some quarters. But Professor Hansen does a useful service in calling attention to the work of a number of authors not now much read, particularly that of Tugan-Baranovsky and other continental economists of the period before the First World War on the theory of investment. This part of the book concludes with an admirably up-to-date

treatment of the present state of business-cycle theory, preparing the way for a well-balanced discussion of policy in Part IV.

Of the three volumes under review Professor Hamberg's is the most confessedly a text-book. Much of it is taken up with a recital of alternative hypotheses, followed by an eclectic summary, much in the manner of Professor Haberler's *Prosperity and Depression*. The author's general approach may be summed up as eclecticism within a Keynesian framework. The exposition is for the most part clear and workman-like, though quite lacking in originality. The pace is leisurely, and the correlation between the space accorded to different topics and their importance is not perfect. A lack of theoretical rigor at many of the more difficult points is only partly excused by the author's desire to keep his book on the undergraduate plane. The statement of Professor Hawtrey's theory fails to indicate the part played in it by lags, and the section on the interaction of the multiplier and the acceleration principle makes no mention of the problem of damping. It seems a pity, too, that in over 600 pages, mostly devoted to theory, no room could be found for mention of Mr. Kalecki's name nor of Mr. Kaldor's model of the cycle. On the other hand, the treatment of certain issues is notably good : the demand for cash for the precautionary motive, the Ricardo effect and the significance of harvest fluctuations provide examples. The chief defect of the book taken as a whole is perhaps the almost complete absence of any theoretical discussion of the relation between the trend and the cycle. Judging from his opening section on the statistical decomposition of time series, the author apparently regards these as unrelated phenomena.

Mr. Achinstein was a pupil of Wesley Mitchell's, and his book is strongly marked with the Mitchell imprint. He starts with a survey of theories, briefer than Professor Hamberg's but not much less comprehensive, and clear and to the point. Part II contains empirical descriptions of the course of the cyclical process in terms heavily dependent on National Bureau researches. The most original and noteworthy feature of the book is the allocation of well over a third of its space to " Secular Trends and Cyclical Fluctuations." As it turns out, this part is a little disappointing, since, apart from a useful introductory section on the possible meanings that may be attached to the decomposition of a series into trend and cyclical elements, it consists chiefly of a recital of the contributions to the study of secular trends made by different authors in the past, without any serious attempt at synthesis. But it is good to have these contributions assembled

together in the present context, and Mr. Achinstein is perhaps hardly to be blamed for failing to arrive at any clear-cut conclusions. The book is marked throughout with the thoughtful caution associated with Wesley Mitchell's example. Mr. Achinstein is not, perhaps, entirely convincing in his championing of the "cost-price" or institutional approach to business cycles, but it is certainly seen at its best in some of his chapters, notably in the very interesting section on fluctuations in the building industry.

R. C. O. MATTHEWS

St. John's College,
Cambridge.

What Do Economists Know? By BENJAMIN HIGGINS. (Melbourne: Melbourne University Press, 1951 (London: Cambridge University Press, 1952). Pp. viii + 166. 15*s*.)

THESE six lectures on "Economics in the Crisis of Democracy," delivered by Professor Higgins when he occupied the Ritchie Chair of Research in Economics at Melbourne, were addressed primarily to the community of "intelligent laymen." At the end of the book Professor Higgins makes a powerful plea for the recognition of the professional status of economists, to be backed by law. While the electorate must still decide the ends of economic policy, the qualified experts should be given greater powers to prescribe the means whereby they can be obtained. "Why not," he says, "give the economist a chance, and let him take the same risk that a medical doctor does—the risk of losing his practice if his errors are too obvious and too frequent." As a rule when an economist refers to "our science" or embraces the tribe of economists in terms of warm brotherhood, I shift in my seat, look uneasily over my shoulder and creep out of the room muttering "include me out." Too often the collective support of economists is invoked for some narrow and restrictive view of what constitutes economics, or to bolster up some peculiar, and demonstrably false, doctrine. Professor Higgins's lectures did not produce this reaction. His knowledge is extensive, covering a very wide range of topics and methods, and his judgment commands respect. Moreover, he has managed to compress a remarkable number of facts and ideas in a form which remains vigorous and simple. These qualities are likely to give Professor Higgins a good hearing by the intelligent layman. It is important, therefore, to consider how far his account of the present state of knowledge in economics would be

accepted by other economists, and how far they could subscribe to his programme.

Professor Higgins rightly distinguishes economic laws, which are deduced from certain premises, and empirical laws which are more directly observable. He is, I believe, unduly optimistic about the predictive efficacy of the latter kind. It is true that econometric models of apparent complexity have been made—he quotes Klein's model for the United States 1921–41—but the fact remains (as some of their constructors recognise) that models of this type involve heroic abstraction. I suspect that one of the main reasons why we get good correlations in the inter-war years is that, for a variety of reasons, especially unemployment in industrial countries, fluctuations were dominated by demand changes, most supply elasticities being high. Only time can show how well consumption functions, *et hoc genus omne*, can stand up to a more fully employed, as well as a more consciously interventionist, world. And do we really know, as distinct from making our guesses about, how much a given increase in interest rates will inhibit investment, or what increase (or decrease) in wages is needed to bring about a required change in the output of coal or textiles? Above all, do we know why some economies grow, and others do not?

When it comes to the formulation of policies, Professor Higgins argues that it is possible to set up unambiguous and non-controversial objectives which satisfy the two conditions that all (or most) men of goodwill would accept them, and that they should be sufficiently precise for the experts to get to work without introducing new, and possibly conflicting, value considerations. I wonder. Is "full employment without inflation" a precise directive? Is government price control an ethically neutral, technical, device, or is it a blasphemy in the temple of freedom?

In his last three lectures Professor Higgins comes to grips with the great questions of the causes of social and international conflict. He points out how extremes of inflation and deflation can tilt the balance of economic strength in favour of one or other of the Big Three: Big Business, Big Labour and Big Agriculture. But he seems to suggest that with the right economic objectives, not simply would a workable equilibrium be achieved between the contending forces, but the very sources of conflict would somehow disappear. Here the problem has been well stated, but it has not been solved.

If I have disagreed with the author about three essential features of his argument, I hope also that I have shown that his

argument is one which economists should study closely. I shall not join in his campaign for a closed shop among economists. Those economists who do risk their necks by studying the real world and making predictions which can be proved wrong by the facts are, I believe, the kind of economists to encourage. But if they are to lose their practice whenever they go wrong, we should soon be left with a profession containing only those who are adroit enough to remain in the realms of pure theory where nothing is ever wrong, or relevant.

G. D. N. WORSWICK

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Oxford.

Welfare and Competition. By T. SCITOVSKY. (London: Allen & Unwin, 1952. Pp. 457. 25*s*.)

THE main purpose of this book is to bring together the latest developments in price theory and welfare economics, so as to explain the working of the pricing system in both perfect and imperfect markets, and to assess its ability to allocate resources and distribute products efficiently from the point of view of non-ethical welfare criteria.

Part I is the introduction. In Part II, which deals with conditions under perfect competition, we are introduced to indifference curves, opportunity cost curves, transformation curves, demand curves, cost curves, isoquants, isocosts and the like. The exposition is at once meticulous and extremely lucid: even I (a deplorable geometer) was able to see what has to be tangential to what, and why. Admittedly the reader's task is lightened through the argument being confined to two-dimensional cases: these we are assured can readily be translated into n dimensions, but perhaps we are let off a little too lightly in never being called upon to look a cross-derivative straight in the eye.

The chapter on Capital calls for special attention. Here we are told that capital funds are under perfect competition the only factor in inelastic supply to the firm, and it is their availability which, at any point of time, sets the limit to the size of each firm. What determines the terms on which capital funds can be obtained? The answer which Professor Scitovsky gives to this question is hardly satisfactory, mainly because he (like so many of us) finds that the answer which seems most plausible in Stockland is quite different from the one which seems most plausible in Flowland. In his exposition he takes us first to Stockland, where

the unimportance of current saving and of new issues is so obvious as to be mentioned only in a footnote (p. 199), and where the investor claims a reward only to compensate for uncertainty and illiquidity. Then suddenly we are on the other side of the looking glass in Flowland where the rate of interest is determined by the forces of thrift and productivity, represented by the curves labelled *Savings* and *Marginal Efficiency of Investment* in Fig. 50, p. 221. The point of intersection of these two curves " shows the interest rate which would equate current savings to current investment in a fully employed economy; and it also shows what the level of savings and investment would be under these circumstances " (p. 225). Is there, however, any tendency for this particular rate of interest to be realised in practice? Unfortunately we are not allowed to consider this question in any detail, because at this point we are sharply reintroduced to our old friends from Stockland, uncertainty and illiquidity, and without further ceremony we are told that their dues do *not* after all account for the whole of the rate of interest, as seemed to be the case in Flowland, but are *additional* to the reward for thrift (p. 225). Surely this conclusion cannot possibly be right. For the saver's reward is *either* liquidity *or* interest, depending on whether or not he invests his savings: *prima facie*, therefore, Professor Scitovsky is guilty of adding alternatives.

In Part III we leave perfect competition to consider an economy in which some transactors, namely all non-farming firms, are price-makers, though everybody else remains a price taker. Here the price-making firms have (or act as though they had) marginal-cost curves which are horizontal over the normal operating range (p. 309): unfortunately, however, most of the empirical evidence for this seems to relate to times of widespread unemployment, so I doubt whether sceptics have been silenced once and for all. Professor Scitovsky's thesis about cost curves provides half of his explanation of the apparently widespread practice of setting prices by reference to a constant percentage mark-up; the other half of his explanation is the thesis that a price-making firm assumes, *unless there is definite evidence to the contrary*, that the elasticity of supply of each factor employed, and of each product sold, is unaffected either by changes in the firm's output or by shifts in the relevant schedules of supply or demand (see *e.g.*, p. 298). This thesis is far from being self-evident, but is unfortunately not supported by any empirical evidence.

In Part IV we pass into the real world of restricted competition

and uninformed markets, and here Professor Scitovsky shows that his exceptional skill in *a priori* reasoning is equalled by his mature understanding of the practical workings of economic institutions. Only once did his story strike me as slightly inadequate : I would have liked a more thorough explanation of why old firms have an anti-social tendency to delay the introduction of new methods (pp. 342 and 429). Are they simply the victims of their own book-keeping (in that they are reluctant to scrap plant before it has been written down to its scrap value), or have they a more sinister vested interest ?

In *Welfare and Competition* Professor Scitovsky has bent his great erudition, wisdom and expository skill to the ambitious enterprise of bringing Marshall up to date. By this book may be fairly judged how much (and also, alas, how little) we have progressed since the final edition of the *Principles*. It will assuredly come to be recognised as the standard work in its field.

BRIAN TEW

Nottingham.

The Sources and Nature of the Statistics of the United Kingdom, Volume I. Edited for the Royal Statistical Society by M. G. KENDALL. (Edinburgh : Oliver & Boyd, 1952. Pp. viii + 352. 21*s*.)

THIS volume brings together twenty of the articles previously published in various numbers of the *Journal of the Royal Statistical Society*, and also available as reprints. It is convenient to have them all together in one volume, and as the articles were all written by people with a profound knowledge and experience of the field in question, they naturally contain much which is of great value and often unobtainable elsewhere. Nevertheless, I must confess that my dominant impression after reading the book is one of disappointment : it is very useful, but it might so easily have been so much better. Since the march of time will inevitably demand a revised edition sooner or later, it seems best to use the limited space available to describe some of the shortcomings for which a remedy might easily be found ; this can most easily be done under certain headings based on the brief editorial preface.

Firstly, it is important in a book on statistical sources to give the reader a firm *date* to which he can regard the description as applying. With a collection of articles by different authors he will forgive the editor if some are less up-to-date than others,

but this increases the need for a date at the head of each. In this book, however, his hopes are raised by the statement in the preface (dated November 1951) that the articles have been "brought up-to-date where necessary," and he gratefully assumes that the editor has cajoled all contributors into amending their accounts to cover the position in (say) mid-1951. But alas, the statement is quite simply untrue of many chapters, and, worse still, there is very seldom any easy way of knowing how out of date a particular chapter is. Moreover, the point may well be of great importance: thus we have no warning that the very valuable chapter on Overseas Trade by Maizels was written in 1949, and so describes the balance-of-payments statistics in terms of the position before the radical changes introduced in October 1950, and does not mention the very useful monthly *Report on Overseas Trade*, which first appeared for January 1950. Even the chapters which have a postscript, or series of "later notes" in square brackets, have not really been "brought up to date": thus the Editor's own chapter on shipping still illustrates the statistics for the world fleet by a series stopping with mid-1947, and still adds the comment that "the surprisingly high proportion of oil-burning steamers in 1947 was a legacy of the war and may not be permanent"—a point on which later information must surely throw some light.

Secondly, the Preface tells us that no attempt was made to standardise the articles, but that authors were asked to observe three requirements, of which the first was to survey "all the statistical information in the chosen field, unofficial as well as official." It was undoubtedly wise not to try to standardise the articles, but it is clear *ex-post* that the results could have been improved if more guidance about scope and form had been given, and some tactful editorial pressure applied to get obvious gaps filled in some articles. Thus there was inevitably a problem about the relationship between the "general" fields, such as census of production, oversea trade or labour statistics, and the "particular" ones, such as the cotton industry or the motor industry. The best results seem to have been secured where the chapters on particular industries include a fair amount about the information to be obtained from the "general" sources, and above all about any special problems in using these sources for the industry in question—Miss Deane's chapter on Publishing is particularly helpful in this respect (and in many others also). But a minimum obligation of an editor should be to see that the industry chapters at least *refer to* the general sources, and include

them in their bibliography; it is highly disconcerting to find that, for example, Mr. Ford's chapter on the Motor Industry not only leaves out all reference to the census of production, but states positively that before the war the only information on production consisted in estimates by the Society of Motor Manufacturers and Traders (which were based on new registrations and overseas trade statistics, and gave no value figures at all). There is, indeed, in several articles a most regrettable tendency *not* to review "all" the statistics, but only those for which the author was in some way responsible: for example, Mr. Ainsworth's article on "Labour Statistics" should really be called "Ministry of Labour Statistics," since it covers (for example) retail prices, but merely refers in a single concluding paragraph to the existence of "many supplementary statistics on labour matters in the publications of other Departments"—including such "supplements" as the whole range of data on occupations in the census of population. Perhaps the most alarming revelation of the Departmental Approach is the statement "The Ministry of Agriculture have their own figures of numbers employed in agriculture, and the Ministry of Works of those engaged in building"—with no attempt to indicate their usefulness or whether they tell the same story as those published by the Ministry of Labour.

Thirdly, the Preface tells us that authors were asked to "call attention to pitfalls in interpretation." This very wide phrase has been treated very differently by the various authors, but the reader is all too often left with inadequate guidance about the probable *accuracy* of the figures, or about what to do when two sets apparently contradict one another. Some authors are extremely conscientious about explaining why figures from different sources should not be *identical*, owing to differences in definition, coverage or time-period, but we are usually given no hint as to whether they consider the series as fundamentally compatible or not, or which is to be preferred. The very natural inference by the reader is that he need not worry about the apparent inconsistencies and that he can simply place complete faith in the one with the definition which fits his problem best; a statistician's life would indeed be much easier if such an inference were more often justified.

Finally, a revised edition should pay more heed to the fact that the book will be used for reference purposes. Many of the bibliographies could be presented in a form which would better meet the third requirement to authors "to enable a student to

follow up the subject": that on agriculture, for example, has 169 items, but they are not classified in any way. There is no index, which is understandable enough, but each chapter should have a table of contents, such as appeared in the *Journal* version of the article on agriculture, and saved the reader from having to hunt through thirty pages to find the part on (say) agricultural credit.

This review has been deliberately critical, in the hopes of securing something yet better in future. That criticism must not, however, hide the fact that the book contains much that is useful, not only about the statistical sources, but also about the subjects themselves. Most authors have wisely decided that an account of the sources is much more effective if it also tells us something of the stories which these reveal.

W. B. REDDAWAY

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A Dollar Index of Soviet Machinery Output, 1927–8 to 1937. By ALEXANDER GERSCHENKRON. (Santa Monica, California: Rand Corporation, 1951. Pp. v + 357.)

As a result of successive five-year plans, Soviet output of machinery has been greatly expanded, and attention has rightly been devoted to measuring the extent of the increase. The official Soviet figures have been regarded with scepticism by nearly all students of the subject, and indeed Soviet economists have themselves made it clear that output series in terms of the so-called "unchanged 1926–27 prices" provide no reliable guide to the actual growth of machinery production, since types and models not produced in the base year have been given an "unchanged" valuation equal to the price ruling in the year of their introduction.

Can another and more reliable guide be devised? Dr. Jasny endeavoured to compute an index for machinery in "real 1926–27 prices," although of course this approach is fraught with many practical difficulties. Professor Gerschenkron, while recognising the advantages of using Russian prices if this is possible, tries a quite different approach: he compares as many Russian machines as possible with their nearest American counterparts—128 different items have been found comparable; then, using the *1939 U.S. dollar prices* of these machines, he constructs a Soviet output index on a 1927–28 base. He cannot take his series beyond 1937, as hardly any relevant Soviet figures are available after that date.

His results are summarised in sixty-seven fascinating and lucid pages, and there follow in 288 pages of appendices the fullest details of all his data and computations. He arrives at a gross value index for 1937 of 525 (1927–28 = 100), against comparable Soviet official indices ranging from 1,415 to 1,509. Various cross-checks are attempted, different base-years are tried out, comparisons are made with United States output, and the whole subject is tackled with exemplary thoroughness, and a degree of humility seldom found in statisticians. The reader is warned again and again not to read too much into the computations, that various unavoidable lacunæ affect the result, and, most important, that the use of 1939 dollar prices must of necessity produce an index very different from any index based on Russian prices. Soviet prices of machines whose output expanded fastest in the 5-year-plans were very high in 1927–28, and their use would certainly produce a much higher figure than Professor Gerschenkron's 525. He therefore stresses that the difference between his index and the official Soviet version is in no way a measure of the degree of exaggeration of the latter, even though he insists (rightly, on the evidence) that the Soviet figure is exaggerated on its own ostensible price base.

These problems led Professor Gerschenkron to contrast machinery output indices calculated in terms of a price structure appropriate to a highly developed, or a more backward, country. For this purpose he inquired into *American* machinery output and price data for the census years 1899, 1909, 1923 and 1939, and his results are of so great a general interest that they should be known far outside the narrow field of Soviet studies. In the nature of things, and as he himself frankly recognises, his calculations suffer from a number of imperfections, his data being neither exactly comparable nor wholly representative; however, the results remain most instructive, indeed amazing.

One of his most striking computations relates to the years 1899 and 1939, for which he found fifty-seven more or less comparable items, covering most sections of machinery and vehicle output. In 1899 prices the volume index for 1939 would be 1,542 (1899 = 100), but the same calculation in 1939 prices produces an index of 198 (1899 = 100). One momentarily suspects a printer's error, but the whole calculation can be followed in detail item by item in the appendices. Having exonerated the printer, the reader may jump to the conclusion that automobiles are to blame, especially as their weight in the 1939 output figures is extremely high. However, Professor Gerschenkron has covered

this point by recalculating with automobiles excluded. This time the 1939 indices (1899 = 100) work out as follows: in terms of 1899 prices, 555; in 1939 prices, 70. In other words, the disproportion between the two figures, far from being diminished, is actually slightly increased.

Professor Gerschenkron remarks, not unjustly: "Clearly, in the case of formidable differentials of this sort, no adjustment of the index will do. Naturally there would be nothing meaningful, let alone 'ideal,' about taking the square root of the product of 1542 and 198." He considers that "highly fabricated" products tend to be scarce and dear in an economy in an early stage of industrialisation, that the output of these products shows the biggest relative increase as industrialisation proceeds, accompanied by a relative fall in their price, and that this explains the discrepancy. There is obviously some truth in this analysis: in a relatively undeveloped economy the more complex varieties of equipment tend to be produced in small quantities at high prices, if indeed they are produced at all. Yet one wonders if this is always the most useful way of looking at the problem. Perhaps any new "line" is scarce and dear just because, in the given period and country, it is a new line; if at a later date it is mass-produced, its relative price may be expected to fall, and of course some products lend themselves more easily than others to mass-production economies. Be this as it may, there is strong evidence in favour of Professor Gerschenkron's main thesis: "pre-industrialisation prices, if used as weights, will yield a higher rate of growth than post-industrialisation prices." That this factor is relevant to Soviet output comparisons has not escaped the attention of other analysts; for instance, Dr. Jasny was certainly aware that part of the difference between his and Dr. Wylers' (lower) estimates was due to the latter's use of United States prices. However, it is good to be so forcibly reminded of the magnitude of possible discrepancies.

The extent of the discrepancy in Professor Gerschenkron's American examples is influenced by certain features of the commodities he has chosen, affecting the size of the unit he is valuing. Two examples will make the point clear: in the first place, his tables show a striking fall in the price per unit from 1899 to 1939 of nearly all kinds of electrical equipment, and an equally striking rise in volume of output; however, one suspects that part of the decline in cost is due to a fall in *size of unit*, and this has the effect of exaggerating the volume of 1939 output in terms of 1899 prices. Secondly, the greater size and complexity of railroad

equipment certainly contributes to the great *increase* in price per unit which has taken place between 1899 and 1939; as output of railroad equipment in 1899 was much higher than in 1939, the effect is to inflate the 1899 output when expressed in 1939 prices. It will be observed that the two distortions caused by changes (apparently in opposite directions) in size of unit *combine* to increase the discrepancy between the indices: the one exaggerates the 1939 index in terms of 1899 prices, the other reduces the 1939 index in 1939 prices by inflating its 1899 base. Some part of the difference between 1,542 and 198 must have this as its cause. It is also true that nothing like so great a discrepancy occurs in other sectors of the economy. I. O. Scott, in the *Review of Economics and Statistics* for November 1952, demonstrates that the use of pre- and post-industrialisation weights makes relatively little difference in the case of what he calls "consumer durables." This is, perhaps, not surprising, since one cannot visualise any very powerful trend towards more highly fabricated cloth, buttons, gloves, musical instruments and linoleum, to name the major commodities which he analyses. Clearly, the trend which Professor Gerschenkron discusses would be most noticeable in the machinery sector, where the analyst also faces the virtually insoluble problem of arriving at a perfect basis of comparison between changing types and designs; it is here that the statistician's choice of weights and data can make an immense difference to the results. To use Professor Gerschenkron's words, "the magnitudes of the discrepancies are such that no one engaged in international or historical output comparisons can afford to ignore them."

This scholarly work should be available to everyone who deals with index numbers. It is therefore a pity that it is so difficult to obtain. There cannot be many copies in existence, and this is a positive crime against knowledge.

A. NOVE

Glasgow.

Taxation and Incentive. By LADY RHYS-WILLIAMS. (Edinburgh: William Hodge, 1953. Pp. 188. 15*s.*)

THIS book might be divided into two parts, the first giving Lady Rhys-Williams' views on economic questions in general, the second explaining a "Plan" for the combination of Income Tax and National Insurance. The author starts by accepting "the determination to abolish poverty," which she calls the great feature of the century. But she does not want to accomplish

this aim through the re-distribution of wealth by steeply graded taxation and by inflation of the currency, as at present. So far she sees "no visible failure of the will to work up to a certain standard of effort," but there is a "grave deterioration in the desire to work *hard*" and in the will to save for the future; the rewards of extra work being insufficient.

Lady Rhys-Williams looks for something to take the place of the old incentives to work—fear of punishment, of want, and of losing social position. She allows much influence to *esprit de corps*, but little to the desire of gain. With the growth of a social conscience and the rapid extension of social services, poverty, in its acute sense, "is almost non-existent." Our author now wants a new kind of redistribution of income, "not from the rich to the poor, but from those at all levels of income who have no dependents to support in favour of those with dependent children or with sick or old people to care for."

In the first part of the book we find some abstract discussion of the functions of the State and the individual, or of how much the Chancellor ought to take from the taxpayer and redistribute. Under our system thrift is discouraged because "those who save get very substantially less help from the community that those who do not." Lady Rhys-Williams understands the reluctance of trade unions to give up restrictions designed to prevent dismissals. The desire for continuity of employment explains part of the demand for nationalisation, because continuity "would always be assured to public servants." Security for everyone, unfortunately, is not to be guaranteed.

This brings us to the main purpose of the book—our author's Plan to combine Insurance payments with Income Tax. It is part of Lady Rhys-Williams' general theory that "the only method of restoring the will to save is to stabilise the value of money and reduce direct taxation," and that a reduction in direct taxation of "earned income is required as a matter of urgency" all the way down. She condemns the anomaly by which incomes above an arbitrary figure "attract heavy and progressive taxation," while those below it attract no tax, although the recipients "are enjoying social services and benefits worth about 25*s*. a week," towards which they pay only the 4*s*. or 5*s*. of their insurance contribution.

The new Plan, as submitted to the Royal Commission on Taxation, proposes that "all contributions shall be made in the form of Income Tax, payable upon all the income of the individual whether earned or unearned." Then, to balance the loss of the

present allowances, each adult would be granted a weekly allowance, with 7*s.* 6*d.* for the first and second child, and 10*s.* for all other children. Alternative schemes make the personal allowance 10*s.*, 8*s.*, or 7*s.* 6*d.* a week. On all income up to £600 a year the Tax would be uniform at 4*s.* in the £ "earned" and 5*s.* "unearned." Why does our author use the question-begging term "unearned," which the Treasury has abandoned? Incomes between £600 and £2,000 would pay another 4*s.*, and the present surtax would apply to incomes above £2,000. Payment would be made directly to wives; children's allowances "would be payable to either parent."

Critics, no doubt, will dislike the proposal to give all grown-up persons a weekly allowance whether they work or not. But this appears to be an essential part of the simplification and saving of administrative expenses claimed for the Plan. A chapter signed "W. M. D." makes a sharp attack on the recently increased personal and other allowances, instead of a lower "marginal rate of Income Tax," because they must act as a "disincentive."

J. E. ALLEN

Cambridge.

Ireland—Finances of Partition. By L. O NUALLAIN. (Dublin: Clonmore and Reynolds (London: Burns Oates and Washbourne), 1952. Pp. 196. 18*s.*)

IN his preface, Mr. O Nuallain remarks: "There are those, *perhaps*, who *may* consider that the story, as presented, is lacking in objectivity, indicative of a certain bias and they *may* quarrel with my interpretation of the facts. A detached objectivity is not claimed for this work, but it is claimed that the facts, so far as they were ascertainable, have been objectively sought and have been fully presented here." This remark, subject to your reviewer's italicisations, is just, so far as three-quarters of the book are concerned. The title gives no clue to the good work presented under its cover; the book has nothing to do with "Ireland" nor with the "Finances of Partition"—it is concerned with Northern Ireland and the finances of Devolution. It is indeed concerned only with one narrow aspect of Devolution—the fate of Northern Ireland's Imperial Contribution.

This is a useful and necessary contribution to the study of Public Finance. To it Mr. O Nuallain has applied himself with industry, acumen and objectivity, and his collation of the relevant material will stand, even though one may legitimately doubt the propriety of all the deductions he subtracts from the gross Im-

perial Contribution—the material is all clearly stated in detail and each reader can form his own judgment. More is the pity, then, that this informative work is set in a matrix of irrelevant polemics that is likely to deter the serious student. His own arithmetical conclusion that the net Imperial Contribution amounted to £82 million from 1921 to 1950 does not square either with his initial argument that Ireland was over-taxed before the partition of the United Kingdom in 1921 nor with his conclusion that the government of Northern Ireland has since 1921 been carried for the most part on the backs of the taxpayers in Great Britain.

The author gives a good and clear account of the original fixation of the Imperial Contribution and of the successive changes in the legal relationships between the Exchequers in Belfast and London. By preferring political dialectics to a critical assessment of the working of these or similar arrangements (transferred and reserved services and revenues, contribution to the central authority) in a federal financial structure, he has unnecessarily limited the value of his work, even in an Irish context. Nevertheless, the historical portion of his work is invaluable, and will, one hopes, form the foundation for further more critical and more administrative studies.

G. A. DUNCAN

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Dublin.

Devonshire Studies. By W. G. HOSKINS and H. P. R. FINBERG. (London: Jonathan Cape, 1952. Pp. 470. 36*s.*)

THIS charming and admirable book deals with a great variety of topics, and a review limited to its economic aspects can hardly do it justice. Readers of very diverse tastes, and readers who have little interest in economic history, will find much to delight them here. But to all its readers the book will teach one lesson—the interest, value and importance of researches into local history when they are made by real scholars who combine a wide outlook with a detailed and intensive knowledge of local conditions and with the gift of attractive and lucid exposition. Mr. Finberg's remarkable essay on the village of Uffculme in the Middle Ages is alone sufficient to produce a change of heart in anyone inclined to disparage such studies.

In the economic sphere the authors make important contributions to knowledge in several directions. Mr. Finberg gives us a cogent refutation of the common belief that the open-field system did not extend into Devon, and incidentally shows that at

Braunton, the celebrated "Great Field," which Gray supposed to be "of relatively recent origin," is not only ancient, but is not improbably the surviving member of a group of fields whose lay-out resembled that characteristic of the so-called "midland system." Dr. Hoskins's chapter on "The Wealth of Mediæval Devon" is particularly interesting: based primarily upon the tax assessments of 1334 and 1445, it shows that, while the towns declined in the fifteenth century, the countryside was comparatively prosperous; and Dr. Hoskins breaks new ground by his thorough examination of the evidence for "widespread building activity"—a line of inquiry that deserves to be followed up in regard to other parts of the country. I have long thought that the "luxury" additions that were made to so many churches in the late mediæval period (clerestories in particular) have not been sufficiently considered by those economic historians who regard the fifteenth century as an age of almost continuous economic decline in England; but of course the close dating of such additions is very difficult, and Dr. Hoskins is to be congratulated on the precision of the evidence he has managed to collect for Devon. One wishes, however, that he had told us whether the rural prosperity was partly due to migration from the towns, either to avoid guild restrictions or to reach sources of water power for fulling.

Another important and fascinating chapter is one by the same author on "The Making of the Agrarian Landscape." It is rather bold in hypothesis, but none the less interesting and suggestive for that. Dr. Hoskins pleads strongly for "historical" factors against the claims of geographical fatalism; but it is individual historical development and different waves of agricultural exploitation that he emphasises, and he does not invoke the *deus ex machina* of Race with a big R. For Devon indeed an inquiry of this kind is all the more difficult, because we cannot here make much use of place-names as a means of separating different strata of exploitation, as we can, for example, in east Yorkshire, where Scandinavian names distinguish many outlying hamlets from the older Anglian villages. In his discussion of hamlets and nucleated villages Dr. Hoskins perhaps underrates the influence of geological conditions. One wonders whether he has given sufficient consideration to the position of the water-table. In the view of Des Marez, who is far from being a geographical fatalist, this was in Belgium the chief factor determining the form of settlement, a deep water-table tending to induce concentration in the neighbourhood of a stream until improvements in technique

made the need for deep wells a less serious obstacle to the establishment of scattered hamlets and isolated farmsteads. But it is not the least merit of this book that it will stimulate discussion and further inquiry, even though a reviewer is for the same reason tempted to exceed due limits of space. One must, however, add that, though these " Devonshire Studies " are mainly concerned with the Middle Ages, they include a good deal that is valuable for modern economic history. Dr. Hoskins's essay on " The Farm Labourer through Four Centuries " is particularly informing, and carries the story down to the middle of the nineteenth century.

REGINALD LENNARD

Lower Heyford.

The Young Delinquent in his Social Setting. By T. FERGUSON. (London : Oxford University Press, for the Nuffield Foundation, 1952. Pp. xii + 158. 10*s.* 6*d.*)

THIS study of juvenile delinquency in Glasgow covers both the 1,349 " ordinary " school-leavers, included in the author's and Mr. Cunnison's *Young Wage Earner* (ECONOMIC JOURNAL, December 1952), who left school at or soon after fourteen years of age and a further 489 physically and 301 mentally handicapped boys all, or most of whom, remained at school till sixteen. The methods and tests used are mostly those of the earlier study; and there is the same combination of full statistics with human understanding. The 2,139 boys here studied provide a good sample, wider than that of the earlier inquiry, but there is a slight unfavourable bias, owing to the exclusion of boys, of higher quality on the average, who stayed on at secondary schools after fourteen. There are certain complications. Compared with " ordinary " boys, fewer physically handicapped were delinquent (10·7% to 12·2%), but their convictions were more numerous (1·9 per boy convicted to 1·6). For while certain handicaps reduce mobility and therefore opportunity to offend, those convicted seem more liable to fall again than ordinary boys, and to be less responsive (Ch. V) to treatment. In consequence " relative success " of " some of the efforts to dissuade from further crime " (p. 152) has presumably been greater with ordinary, than with physically handicapped, boys. Records of the mentally handicapped are consistently worse than those of the other groups.

Professor Ferguson opens (Backgrounds) with an historical sketch of how present conditions developed. Three chapters deal in turn with each main group, applying tests as before of personal

qualities and scholastic abilities, health and physique, home and family circumstances, work and unemployment. Two further chapters—"Response to Treatment" and "General Conditions Arising from the Study"—discuss the groups collectively and comparatively. Among other points, it is interesting to compare the conclusion here reached that mothers' employment "out of the home appears to exert little influence on the incidence of delinquency" (p. 145), with the earlier finding of home environment rather above the average where mothers were at work. Again the contribution of the "broken home" to delinquency in juveniles was, as a rule, "relatively unimportant" (p. 63), while absence was to be preferred to the presence of a bad parent (p. 146). The influence of two World Wars and World Depression (1930–34) in increasing delinquency is rightly noted.

Multiplicity of causes, with addition of special problems of handicapped boys, is often marked. "Overcrowding and bad housing breed handicapped children and severely affect their employment in youth" (p. 77), and injury early in life "may have some association with the higher incidence of delinquency" (p. 79). More generally cause and effect are sometimes difficult to disentangle, whether, for example, blind alleys make lads unstable, or early instability leads to blind alleys. Professor Ferguson, however, skilfully indicates major influences. Among "ordinary" boys, "low scholastic ability" is seen as "the principal single factor" (p. 51), and delinquency is very pronounced among the lowest 10% (p. 119). Generally poor physique, especially stunted growth, seems more potent than specific handicaps. Blind-alley work, with frequent change of employer, is markedly injurious; and among those who "failed to continue an apprenticeship, delinquency rates were twice the average" (p. 32). Bad housing and overcrowding provided the chief environmental influence.

This new work of Professor Ferguson will provide valuable help in meeting an essential need. For "lack of basic information, lack of denominator, carries obvious risks, the danger of too easy acceptance of 'hunches' as soundly based facts" (p. 111). This necessary basis he himself has provided for Glasgow. His work, if in places comment might be rather fuller, is thorough and informative. Others, it is hoped, will make similar studies elsewhere.

N. B. DEARLE

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Oxford.

Le Service de Santé en Grande-Bretagne. By YVES VINCENOT. (Paris : Armand Colin, 1952. Pp. 260. 900 Fr.)

M. VINCENOT has written a legal and social study of the National Health Service. In the first section he analyses the legal structure of the service and the story of its introduction, and devotes himself mainly to analysing the content of the new social "right" of the citizen to demand medical care of the community in contrast to the insurance principle of the other post-war Acts. He gives six reasons for the introduction of the service as it stands : first, because any attempt to have extended the panel system to the dependents of those previously covered would have left an invidiously small group out of the scheme; secondly, because the administrative cost of so doing would have been high; thirdly, because few can afford to pay for many kinds of modern treatment; fourthly, because of an emotional objection by many to money payments in medical matters; fifthly, because medical and economic efficiency both require a comprehensive system including all branches of treatment; and sixthly, because the Beveridge scheme required a free service as a basis for uniform benefits. M. Vincenot's sources omit any reference to Professor Titmuss's work showing the importance of the war-time social and population movements and the war-time need for medical treatment irrespective of personal means, as the real basis of the Health Service, and consequently far too much emphasis is placed on the importance of the Beveridge Report, giving the insurance principle an unlikely causative role in the introduction of the service (after all, Beveridge also assumed equal rents in another section of the Report) and also creating a false antithesis between the insurance principle and free services. The insurance principle itself was adopted solely because "*les anglais n'apprécient pas la charité publique ; ils aiment avoir le sentiment de recevoir ce qui leur est dû*"; the nutty flavour of this remark can only be appreciated in the context describing the new social structure and the new social principles it needs.

In the second section M. Vincenot devotes himself to analysing the new legal position of the state–doctor and doctor–patient relationships, remarking that such an analysis must take into account social factors. It is a pity that apart from Statutes and statutory instruments he relies for his information mainly on 109 articles in *The Economist.* He misses the point that the cost of the Health Service must be analysed either as a real, a monetary or a fiscal burden. To claim that in 1950–51 too much was

being spent on the National Health Service, and then to complain that private charitable funds for medical purposes have diminished, or that salaries are too low to attract sufficient doctors, confuses all these levels of analysis. He nowhere points out that to get more doctors you have to train more, not necessarily to pay existing doctors more, nor does he consider how many people can be spared for medical purposes and the growth of ancillary professions. He neglects the real social problem of the growth of self-governing professions, largely employed by the State, controlling the expenditure of vast sums of money, although he considers each element of the problem separately, coming to the old irrelevant chestnut that the family doctor is a good but disappearing thing, a conclusion itself crying out for closer examination.

Altogether M. Vincenot's book gives a clear account of the service, especially useful for foreigners, and an entertaining whiff of the Bevan–Hill controversy, but it will disappoint those who look for a survey of the actual working of the service and its legal, political, social and economic consequences.

J. E. VAIZEY

Queens' College,
Cambridge.

Drink. An Economic and Social Study. By HERMANN LEVY. (London: Routledge & Kegan Paul, 1951. Pp. 256. 21*s.*)

THE death of Hermann Levy in 1949 deprived us of a scholarly and fluent writer on economic and social problems. His studies (with Sir Arnold Wilson) on social insurance are now of mainly historic interest, but his early work on monopoly and more recent books on retail trade are likely to remain part of our current literature on these subjects for many years.

So is his book on *Drink*, left as an unfinished manuscript and edited with apparent success by Mr. R. P. Lynton. Few subjects are so beset by propagandist forces: "the problem has been hitherto dealt with by two directly opposing sides, the one linked up with the temperance movement and largely backed by the Churches, the other connected with purely private interests and designed to fight the former" (p. 5); and yet, while not attempting to conceal his own concern about the social problems connected with drink, Professor Levy has marshalled the facts and set out his conclusions with admirable impartiality. He blows gusts of cold air into the heat of the battle, and popular misconceptions fall like ninepins on either side.

The book is in three parts, of which the first two deal with the medical and social implications and the statistical analysis of the drink problem. What determines the individual's consumption of drink? Mainly "the desired narcotic effect, the support of social customs, and the illusions concerning the effects of drink" (p. 16). But they *are* illusions: the food and fuel value of drink is negligible, the "feeling of warmth" is deceptive, there is no evidence that it increases output, "medicated wines" have no medicinal effect whatever, even the "nightcap" is a delusion. Nevertheless, we need to remember the very simple fact that drink is primarily taken as a refreshment.

What about the social effects? The causal relationships are less obvious than we sometimes imagine. Drink may lead to disease, poverty, domestic unhappiness, crime or absenteeism; but these things are often the cause and not the result of excessive drinking, and our statistical correlations must be very cautious. Has the nation become more sober? The figures of consumption per head suggest that it has, but "averages hide the important fact that the maximum is a long way from the minimum" (p. 75). Convictions for drunkenness are deceptive: they may conceal a change of tactics or efficiency on the part of the police, or a change in the legal interpretation of "under the influence of drink." Again, figures of expenditure on drink "do not indicate what poverty is mainly caused by drink nor how the money would be spent if it were not spent on drink" (p. 94). Statistical pitfalls are made to yawn before us at every step. But Professor Levy has no doubts about the seriousness of the social evils associated with drink or the need for the State to assist in their suppression. After pointing out that the demand for drink may be income-elastic, at least in the short period (a general improvement in social conditions does not lead automatically to more drunkenness, but "sharp fluctuations of prosperity and distress may certainly have a direct influence on drunkenness" (p. 86)), but is probably not price-elastic, he suggests that "the State should not just rely on sources of taxation from which it can most easily get money, but link up the policy of public finance with that of economic and social welfare" (p. 103). This, of course, opens up several interesting possibilities. But the argument peters out, and we are left wondering what brand of welfare scheme he had in mind.

Part Three discusses the moderating and restrictive influence of the temperance movement and State legislation on the one hand, and the attempts of the trade to increase consumption of

drink and yet maintain respectability, on the other. The trouble is, of course, that no amount of legislation can determine the borderline between moderate and immoderate drinking; with the result that Government efforts to restrict the latter inevitably curtail the former, and the trade's efforts to expand the former inevitably facilitate the latter. The analysis of the resulting contradictions in trade policy and propaganda is perhaps the most fascinating part of the book. But here, as elsewhere, the analysis is more exciting than the recommendations. Professor Levy thinks prohibition unworkable; he favours all legislation which makes it more inconvenient for people to drink; and he would like to see the public houses set free from brewery control, so that they may develop as restaurants on the continental pattern and social centres where darts and meals and music are not simply aids to increasing the consumption of drink, but are the main attraction. The enormous financial implications of this, both for the breweries and for the "free houses," are not discussed.

WALTER HAGENBUCH

Queens' College,
Cambridge.

Strikes—A Study in Industrial Conflict. By K. G. J. C. KNOWLES. (Oxford: Basil Blackwell, 1952. Pp. xiv + 330. 42*s.*)

THIS book, relating mainly to British experience between 1911 and 1947, deals with strikes in general rather than with particular strikes. It examines the nature of strikes, influences affecting the use of the strike weapon, legal and other methods of control of strikes, and the causes and consequences of strikes. Strike statistics are examined in relation to other series of economic statistics, and are analysed by industry, by season, by region, by objective, by character, by result and by various combinations of these factors. The difficulties of determining any close correspondence between strikes and any single economic series emerge clearly from the analysis. The tentative conclusion is, however, reached that, during the period under examination, the level of employment has probably had most bearing on the worker's life, that a high level of employment has been a permissive cause of strikes, and fear of unemployment a main deterrent. The industrial and regional analysis clearly justifies the author's conclusion in regard to propensity to strike that "it matters less where you live than what you do for a living."

As a compilation and analysis of statistical material alone,

this book is unique and invaluable in providing a means of reference. But it is much more than that, and its main interest as current reading lies in the extent to which it provides an explanation of the virtual disappearance of the strike in this country. Whether or not that is a lasting condition, whether or not it is even an entirely healthy condition, whether or not it is a mere bottling up of discontents which break out in other ways as factors hindering industrial efficiency, that is what in effect has come about. Strikes—actual stoppages of work—had, even long before the Second World War, ceased to be more than a negligible factor. The period since the end of the war, when by all earlier criteria conditions were favourable for strikes, is in many ways the most remarkable. The author's conclusion is that for many years now strikes " have been less and less an instrument of Union policy, and increasingly a weapon of rebellion against Union authority—and sometimes State authority."

The question of how this has come about provides the occasion for the author to consider in outline the changes, mainly of an institutional character, which have affected the conduct of industrial relations over the period he examines. The growing centralisation of trade unions and employers' associations and of collective bargaining which has developed in this country has improved relations and reduced militancy. The author suggests that it is at the top level, where such negotiations take place, that the *rapprochement* between employers and workers has been mainly evidenced. Agreement at the centre has not always carried with it agreement at the periphery; and so we have the phenomenon of the unofficial strike—of little significance in the picture of industrial relations as a whole, but of potential serious import for the trade-union movement. In connection with unofficial strikes it is refreshing to find the author not accepting at their face value all the usual explanations and excuses for these outbreaks which are put forward on very flimsy evidence. In particular, he examines in a critical manner the suggestion that procedural delays involved in the centralisation of industrial negotiations are a prime cause. Time consumed because of plain failure to agree must, as he points out, be distinguished from administrative delay; and irritation ascribed to delay may simply be due to the fact that the eventual settlement is adverse.

The part played by arbitration in lessening the use of the strike is also examined, but it must be remembered that the book was written before the National Arbitra ion Tribunal was replaced by the Industrial Disputes Tribunal. The author's conclusion is

that arbitration, whether or not it produces equity, certainly obviates trials of strength. Arbitration, however, depends in essence on consent. The increased use of arbitration, therefore, is perhaps better regarded as a consequence than as a cause of reduced militancy in industrial relations. Voluntary arbitration, based on agreements to submit unresolved disputes to impartial settlement and to abide by the award, has been a notable feature of industrial relations in recent years, particularly in the nationalised industries. The suggestion (on p. 69) that compulsory arbitration has been introduced in these industries must surely be made by inadvertence; if not, it is certainly a novel use of a term already much misunderstood.

H. S. KIRKALDY

Queens' College,
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Comparative Labor Movements. Edited by WALTER GALENSON. (New York: Prentice-Hall, 1952. Pp. xiv + 599.)

THIS book consists of a short introductory article by Professor Walter Galenson and seven studies relating to the trade-union movement in different countries as follows: Great Britain, by Mr. Allan Flanders; Scandinavia, by Professor Galenson; Australia, by Mr. Kenneth Walker; Germany, by Professor Philip Taft; France, by Mr. Val Lorwin; Italy, by Professor John Clarke Adams; and Russia, by Mr. Isaac Deutscher. It is not stated whether any common plan was laid down as a basis for the preparation of the studies, but the editor, in his introduction, tells us that the authors "were accorded considerable latitude in emphasising what they thought important." Mr. Deutscher's study of Russia appears to be identical, except in minor details, with his book *Soviet Trade Unions* published by the Royal Institute of International Affairs in 1950 and reviewed in this JOURNAL in March 1951. Mr. Flanders' study of Great Britain, with slight modifications and additions, has recently been published in this country in the *Hutchinson's University Library* series under the title of *Trade Unions.*

Whatever the plan of publication, the authors have certainly taken full advantage of the latitude accorded to them in emphasising different aspects of the subject. Some of the studies, notably those on Germany and Russia, are largely historical. Others, for example, those on Italy and France, deal in considerable detail with the tangled tale of trade-union relations with

political parties. Others again, especially those on Great Britain and Scandinavia, concentrate rather on the present structure and status of the trade-union movement and the machinery and methods of industrial relations. The reasons for differences of treatment are in some cases inherent in the nature of the case; sometimes, however, they are less obvious.

It is understandable, for example, in view of the part played by trade unions in its administration, why references should be made to the principles of social insurance in Russia. It is less easy to understand why facts and figures about coverage, contributions and benefits under social security in Italy are given in some detail, while the subject is not dealt with at all in Britain, apart from an incidental (and incorrect) statement in connection with trade-union finance that some trade unions pay out the state unemployment benefit to their members. Again, the study on Italy lays some emphasis on the labour movement in the fascist period and the events which led up to it. One might have expected at least as full a treatment of the National Socialist period in Germany and the collapse of the trade-union movement before Hitler. Instead, however, the whole of the events from 1933 to 1945, as they affected the labour movement in Germany, are dismissed in less than a single page. Another subject which receives very uneven treatment between the studies is the attitude of trade unions towards pacificism and action in face of threats of war.

The editor suggests certain conclusions which can be drawn from the studies, or at least certain lines of further inquiry which might fruitfully be pursued. He finds evidence, for example, of an irresistible tendency towards industrial organisation as the basis of trade-union structure. The resistance of craft interests, he concludes, eventually gives way, either gradually, as in Britain, or suddenly, as in the post-war resurgence of German trade unions after their collapse before the Hitler regime. But there is a deviation from pattern represented by the powerful general unions in Britain and Denmark which vitiates any such general conclusion. He draws attention too to the point made by Mr. Deutscher that it was the overwhelmingly agrarian nature of the Russian economic society at the time of the Bolshevik revolution and the virtual non-existence of stable trade unionism that permitted the seizure of power by a handful of men. But how does such a conclusion fit in with the collapse of the German trade-union movement before Hitler? In discussing labour ideology, he points out, as the studies show, that every

labour movement has been exposed to numerous hues of political radicalism, and he concludes that one doctrine usually comes to the top and not the same one in every country. Here again, however, the present turmoil in the French and Italian trade-union movements suggests that such a conclusion is by no means of universal application or is at least premature. A more definite conclusion—and perhaps the most definite one to emerge from the comparative study which the book permits—would be that, unless one doctrine does come to the top sufficiently to submerge all others, the effect of political affiliations on the industrial effectiveness of trade unions is truly devastating.

It is, however, perhaps an injustice to the book, despite its title, to endeavour to press too far the search for comparisons and conclusions. Each of the studies is in itself excellently presented and full of interest as throwing light on the political and economic situation of the country concerned. If none of them brings out a great deal that is directly comparable with the others, it is for a reason that the studies themselves clearly show. They are in fact dealing, not with the same institution in different countries, but with an institution which differs from country to country in its origins and in its objects, in its status and in its structure. The main value of the present book, in bringing the studies together in a single volume, is to show some of the reasons for these differences.

H. S. KIRKALDY

Queens' College,
Cambridge.

Administering Changes. A Case Study of Human Relations in a Factory. By H. O. RONKEN and B. R. LAWRENCE. (Boston: Harvard Graduate School of Business Administration, 1952. Pp. v + 324. $3.50.)

THE Harvard University Graduate School of Business Administration uses the case-study method extensively to obtain first-hand information, and it is adopted by the research group on human relations which has been established within the Division of Research. In a Foreword to this book Professor Roethlisberger emphasises the constant changes which competition enforces on modern industry, including the designing of new products and the introduction of new machines and methods, and he points out that the effects of these changes on the day-to-day attitudes and relationships of work-people are still not sufficiently

understood. To gain a better insight into the problems which such changes create for management in its relations with work-people and among the work-people themselves is the purpose of the research described in this book.

The investigation is in the direct line of succession from the studies of social groupings in industry initiated by the late Elton Mayo, to whom the authors pay tribute. People in a factory form social systems in which technological changes cause disturbances leading to misunderstandings, suspicions and conflicts. These, rather than the new products or processes, make technological change difficult. How to remove these misunderstandings, suspicions and conflicts, which slow down production, has not hitherto been given enough attention by management. The problem is to maintain or quickly to restore stability in social relationships when technological changes are made. The solution of this problem is essential if co-operation is to be secured and work-people are to find satisfaction in their work.

The investigation was undertaken in one of the plants of an American company producing electronic equipment, where the authors made first-hand observations during a period from January 1949 to the spring of 1950, each of them making more than a hundred visits to the plant and staying from one to five hours each time. They concentrated on the changes in human relationships involved in the designing and manufacturing of a new product (the Amicon tube). They made clear at the outset that they were collecting teaching materials, and they seem to have won the confidence of the small number of work-people and supervisors associated with the tube, who talked to them freely about their attitudes to one another.

Much of the book consists of statements made to the authors by these work-people and supervisors about their attitudes whether of conflict or co-operation. At first four people, including two industrial engineers, were made responsible for design work on a new model of tube, and as the work was experimental and intricate they had the stimulus of trying out new ideas and were soon working in friendly co-operation. Then the higher management, thinking the experimental work was completed, gave instructions for production to begin, but many of the tubes proved to be defective, and a series of misunderstandings and conflicts arose between the new workers on production, including the foreman, and the people who had done the experimental work on the tube. There was also hostility between the industrial engineers, who, for special reasons, had done the experimental work, and the develop-

ment engineers, who were usually made responsible for the design and experimental stages of new products. Because they had not designed the tube, the development engineers criticised it and tried to show that it was unsound. Months of wasted effort, prejudice and conflict resulted, during which little progress was made.

A detailed survey is given of these conflicts, which were due largely to individuals or small groups having their own assumptions about their status and responsibilities, and who felt frustrated and antagonistic when they were not recognised by other people. Jurisdictional fights resulted from these incompatible assumptions, and different "logical" deductions were drawn from the same facts by different individuals. Effective co-operation did not take place until some of the people began to see and respect the points of view of others, to practise deliberate toleration of different attitudes, and to establish complementary relationships. How the processes by which these changes were started is not clear, as the authors admit.

The investigation shows that "resistance" by work-people to change is not so much because they dislike working on a new product or using new methods, but because these changes involve breaks in established understandings, loyalties and habits in the social group. Close connection is revealed between the attitudes of members of a group towards one another, towards their supervisor and towards "outsiders" and the amount of work they do and the satisfaction they get from it. Ability to work with other people is seen to be as important as technical knowledge, and sometimes more important. When the foreman acted to improve relations he got better results than when he concentrated directly on output. Various lessons useful to management can be drawn from this very human story.

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Men in Business. Essays in the History of Entrepreneurship. Edited by W. MILLER. (Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1952. Pp. ix + 350. 32*s.* 6*d.*)

Men in Business, a collection of essays, is a publication of the Research Center in Entrepreneurial History at Harvard. This center, established in 1948, derives its chief theoretical impetus from Joseph Schumpeter, who attributed to the creative entrepreneur much of capitalist progress. Since 1942 the Committee

on Research in Economic History of the Social Science Research Council has discussed definitions of entrepreneurship which would cover the wide range of changing circumstances in which the individual business-man operated. Perhaps Mr. Lamb, in the present volume, gives the most concise definition of entrepreneurship as "that form of social decision-making performed by economic innovators" (p. 90). But others active in charting the field have emphasised adaptation to change as well as innovation, and one writer (George Herberton Evans, Jr.) has even spoken of "public entrepreneurship." Profit-making is not considered central to the definition. This volume manifests a broad definition of the term by including two essays about men whose entrepreneurial plans failed. In fact, the volume contributes little to the theory or definition of entrepreneurship.

The pioneers in the field considered entrepreneurial history a middle-way, and a much broader path, between the case-study method employed by the School of Business Administration, which tended to isolate the business-man from the society in which he functioned, and the economic historian, who ignored the individual business-man. Thus while the concept of entrepreneurship adopts the Schumpeterian assumption that individuals have shaped and changed their environment and returns to an emphasis upon the individual's role in history, the researchers in the field maintain that much can be learned about a given society by studying its entrepreneurs and that the influence was undoubtedly two-way, society forming the business-man, who in turn transformed society through economic innovation. Much stress is laid upon co-ordinating the work of scholars in several fields of the social sciences, and the present work includes essays by historians, economic theorists and one economic sociologist.

The problem of method has been difficult. The basic assumption of entrepreneurial history point to studies of individuals, and seven of these eleven essays are mainly biographical sketches which focus upon an innovating period in the subject's life. These essays are most welcome, for they treat hitherto obscure men, and contribute fresh historical material. For the most part they are based on previously unused manuscripts. A variety of "types," nationalities and periods are touched upon. One article deals with a French and another with a Canadian business-man; the others concern Americans. Limited space prohibits a discussion of each. Although one finds variety, no effort has been made to choose "representative" men, and, of course, no synthesis is attempted. Mention should be made of Douglass North's im-

portant article on innovations in life insurance in the late nineteenth century made by Henry B. Hyde and others, who by introducing tontine policies and aggressive marketing enabled their firms to amass financial reserves for industrial investment.

Other approaches besides the individual biography are suggested in the volume. Charles Sawyer's essay recommends a comparative method, introducing it by a comparison between French and American business-men with respect to recruitment, motivation and behaviour. He explains the differences he sees chiefly in terms of the remnants of feudalism in French society. Mr. Sawyer tends to consider American entrepreneurship the norm: American was free of the "negative drag of earlier European ideas and forms" (p. 22). If economic innovation be the chief criterion of entrepreneurship, one would like to see Germany in particular fitted into this analysis. Sawyer's conclusion that "the American institutional system . . . resulted in relatively open access to business careers, and a natural gravitation of talent and energy, as well as status to them" (p. 22) is not altogether consistent with the findings of Miss Gregory and Miss Neu in another article in the volume. Nor does M. Dervieu in David S. Lande's article follow Mr. Sawyer's pattern for the French businessman.

Robert Lamb suggests that the local community and its kinship groups should form the core of entrepreneurial study and should be related to regional, national and world "models." He provides data to reinforce our awareness of the importance of family groups in the early American cotton industry, but in his interest in models and categories, he fails to relate these groups in more than a circumstantial way to the society in which they moved.

The two essays which draw upon Max Weber's theories of bureaucracy and management are to my mind the most stimulating and suggestive. Mr. Chandler's article analyses Henry Varnum Poor's warnings that the financier as railroad executive posed dangers to the technical efficiency and financial soundness of the roads. And William Miller traces the rise of the bureaucratic manager and the decline of the entrepreneur in American business through a study of the early careers of a sample of business managers in the 1900–10 decade. This article and the one by Miss Neu and Miss Gregory are the only ones in which the nature of the study makes possible the shedding of new light on businessmen as a group. The articles on individuals provide interesting historical material, but this type of study has not yet been carried

far enough, if it is indeed a fruitful method of approach, to allow for new generalizations on the nature of entrepreneurship.

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Mr. Rank. A Study of J. Arthur Rank and British Films. By ALAN WOOD. (London: Hodder and Stoughton, 1952. Pp. 288. 20*s*.)

MR. WOOD, one feels, would find it difficult to write a dull book on any subject, least of all on the film industry. He combines a racy style with an unwillingness to suppress a good story or conceal a good prejudice, and his present book never fails to be entertaining. For an illustration of Mr. Wood's method of attack one need look no farther than the first page of the book, where he manages to find space for no less than two of his prejudices. First, he disapproves of middlemen:

> "In the British economy the middleman is usually the man who grows rich; and you could hardly find a more typical middleman than a miller, except that he performs a much more essential function than most."

Second, he is convinced that flour-milling is very dull:

> "The present writer, in point of fact, holds the opinion—though Mr. Rank himself would strenuously disagree—that flour-milling must be about as dull, boring and uninteresting an occupation as any man could choose for his livelihood."

These quotations give, I think, a fair example of Mr. Wood's style, but if they also give the impression that Mr. Wood has not set out to write a serious book about his subject they are to that extent misleading. It is evident, both from the content of the book and from the acknowledgements made by the author, that he has made considerable efforts both to obtain information and to verify its accuracy. Nearly all his material, incidentally, was obtained direct from persons with first-hand knowledge of events. This no doubt helps to explain why one feels that Mr. Wood is more successful when dealing with the character and motives of individuals than with the economic and political problems of the film industry.

It is not surprising, in view of his lack of interest in flour-milling, that Mr. Wood does not spend much time on an account of Mr. Rank's career before he became involved in the film industry. Mr. Wood disposes of this, and of Mr. Rank's family

background, in two short chapters at the beginning of the book. He then gives an account of "British films before Rank" and describes how Mr. Rank's entry into the film industry was prompted by his interest in religious films. Mr. Rank soon widened his film interests, but in Mr. Wood's view the sincerity and strength of Mr. Rank's religious convictions have been among the most important factors influencing his actions throughout his film career.

Most of the rest of the book is taken up with a chronological account of the history of the British film industry since 1934, and particularly with the part played by Mr. Rank and the companies under his control. Even Mr. Wood is unable to put much life into the immensely complicated story of the grouping and re-groupings that accompanied the growth of the Rank organisation, but he compensates for this with his entertaining accounts of film personalities and of the making of individual films. It soon becomes clear that, although Mr. Wood dislikes financiers generally and disagrees with Mr. Rank's views on "almost every conceivable point," he has acquired a liking and respect for Mr. Rank personally. Mr. Rank's own contribution to the growth of the British film industry can, Mr. Wood concludes, be defined with some precision. He provided the money at a time when no one else would do so, and, realising his lack of knowledge of films, he gave his producers a free hand. Too free a hand, it might be thought, in financial matters, but as Mr. Wood emphasises it is not easy to reconcile financial prudence in film making with the desirability of giving artistic freedom to producers and directors.

Mr. Wood is at his most controversial in his concluding chapters when he vigorously attacks the film policy pursued by the British Government during the last few years. Although he over-stresses his case, there is no doubt that much of his criticism is effective. The main value of this book, however, is to be found in the light it throws on the detailed problems of film-making and on the characters of the leading personalities in the industry rather than in its conclusions on matters of high policy. If one wants a dispassionate treatment of these matters one can, after all, find it fairly easily elsewhere. For a lively admixture of controversy and entertainment, however, one could do worse than *Mr. Rank*.

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Gewinnbeteiligung. By HANS BAYER. (Vienna: Springer, 1952. Pp. vi + 164. 20*s.* 6*d.*)

PROFIT-SHARING has long been a much-discussed topic both in American economic literature and in French. In the German-speaking world it has remained a neglected subject, not least because there were fewer practical attempts at profit-sharing. The present monograph by Professor Bayer fills a gap for readers in Austria, Germany and Switzerland. But it will also be read with profit by people in other countries already familiar with the subject.

Professor Bayer's book treats profit-sharing in its wider context. Avoiding mere description and accumulation of a mass of technical details, so frequent in this field, he spreads out in three directions: first, he puts profit-sharing into its proper place as one aspect of the bigger question of labour–management relations in general; second, he is always at pains to point out that the success of profit-sharing is not an isolated problem of a firm or an industry, but depends on the general economic and social framework in which it takes place; third, he tries to support the conclusions derived from experience by giving them a theoretical basis.

This wider approach does not prevent Professor Bayer from offering an extensive and up-to-date view of the actual state of labour–management relations and profit-sharing in a number of countries and of the characteristics of some of the more widely accepted profit-sharing systems. Three out of the six chapters of the book are devoted to this. Since these concentrate on straightforward information, the rest of this review will deal exclusively with the three remaining chapters.

Chapter IV deals with the theory of profit-sharing. This in itself is to be welcomed where mere description or enthusiastic partisanship are the rule. Professor Bayer tries to work out the relation between profit-sharing, on the one hand, and both income distribution and productivity, on the other. He studies these questions on the basis of three models: a simple, centrally directed economy (Wieser's *einfache Wirtschaft*), perfect competition and pure monopoly. Unfortunately, he dismisses the more realistic models of monopolistic competition as theoretically less tractable. The investigation, perhaps not always as rigid and far-reaching as one would wish, arrives at the result that there can be no profit-sharing under perfect competition, as there are no "extra" profits to be shared, but that there is scope for it in dynamic com-

petition (in a Schumpeterian sense) and in monopolistic competition and monopoly. On this theoretical plane the possible advantages of profit-sharing (if it is genuine and not just another form of paying the usual wage) appear to be increased incentive, reduction of the bargaining disadvantage of labour, a mitigating influence on speculative investment booms and subsequent recessions by shortening the lag of wages behind profits in times of expanding trade. As the main danger of profit-sharing the author cites the increased likelihood of combined monopolistic fronts of employers and employees.

It will be clear that Professor Bayer has not created a fully fledged theory of profit-sharing, but rather has pieced together a number of theoretical reflections regarding it. What one misses (and what could be an important task) is a more specific and detailed investigation into some special problems connected with profit-sharing. Thus, it would be interesting to have an analysis of the employer's demand function for labour and of his output function under conditions of profit-sharing, the results being modified by considerations about various long-term motives (stabilisation of labour force, diminution of strikes and so on). One might also try to find how far profit-sharing agreements (such as the frequently cited Scanlon Plan) point towards an entrepreneurial thinking in terms of total costs, total revenues, total wage bills, rather than in the marginal terms usually assumed in economic theory.

In the introductory chapter, in Chapter III ("Hopes and Fears with Regard to Profit-sharing") and particularly in the final chapter ("What is to be Expected from Profit-sharing?") Professor Bayer combines the ideas he has thrown out in the descriptive and theoretical chapters with much good common sense and sound judgment to put the problem of profit-sharing into proper perspective. His view of profit-sharing not as an isolated phenomenon but in relation to the general economic and social background saves him from falling into the easy enthusiasm of some of the apostles of profit-sharing systems. He can thus dispose of some of their exaggerated claims, such as that profit-sharing would end the class struggle, which has its roots too deep in social and economic power relations to be abolished by mere reform of management and wages (p. 138); and he is able to see through some of the humanitarian arguments put forward in favour of profit-sharing arrangements where the true motive is the maintenance of the capitalist system (pp. 62–4).

Professor Bayer himself takes a decided stand neither for nor

against profit-sharing. But he is of the firm opinion that it can work only under certain favourable conditions. On the factory level it requires management and an atmosphere of trust between management and labour (both employees and trade unions) which will arise only if ample information on the firm's activities is available. On the national level it needs the existence of a controlled or planned economy following a policy of " dynamic stabilisation." Only such dynamic stabilisation, which is absent in a free market economy, would ensure the full employment and the regular surplus for distribution without which profit-sharing is bound to meet with distrust or hostility. At the same time the necessary apparatus could be created to prevent the—technologically desirable—economic concentrations from turning into monopolistic bastions which could use profit-sharing as an instrument strengthening their monopolistic hold over the market.

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L'Économie Allemande Contemporaine (Allemagne Occidentale) 1945–1952. By A. PIETTRE. (Paris: M. Th. Genin, 1952. Pp. 641.)

THERE is a voluminous literature on the economics of Federation, but very little on the economics of Partition. They have been discussed after the break-up of the Habsburg Empire by Professor Frederick Hertz in *The Economic Problem of the Danubian States*; they are now being studied in the case of Germany by Professor André Piettre, Dean of the Faculty of Law in Strassbourg in a monumental publication (548 pages text and 100 pages annexe; maps, chronology, table of contents of text and of statistical abstracts cover another 30 pages).

What was Germany up to 1938 has now been cut up in six parts: Koenigsberg and North-east Prussia have gone to Russia; the region east of the Oder–Neisse line has been provisionally given to Poland; the Eastern Zone and the Eastern sector of Berlin is under Russian control; West Berlin, still a kind of four-power condominium, is loosely tied to the Bundesrepublik; the three Western Zones form the Bundesrepublik, and the Saar is economically incorporated with France.

Western Germany covers but 53·2% of Weimar Germany's territory; yet with Western Berlin, but without the Saar, she has a population of over 50 millions, and is, apart from Russia, the

most populous country in Europe. But a fifth of her people are refugees. The consequences of partition have been complicated and obscured by cuts in interzonal trade, and by contraction of commercial transactions with eastern neighbours and Russia. The re-vamping by the Allies of Western Germany's industrial war potential through breaking up banks and industrial combines in order to destroy "excessive economic power" had made a fully satisfactory analysis very difficult.

Monsieur Piettre has set himself the task of answering the question, whether this truncated Germany is viable. He analyses in a succinct introduction the growth and the structure of pre-war Germany. He proceeds to describe in a first part "Vanquished Germany," the break-down of the Third Reich, partition, reparations, and the deliberate destruction of the pre-war industrial set-up. The main part of his book, "Resuscitated Germany," covering nearly 300 pages, deals with what has been called the German miracle, the recovery of this devastated and mutilated country, whose steel and coal production has already surpassed that of France plus the Saar. It was first and foremost due to currency reform. Since this was carried out by a foreign power, the timid tinkering, by which inflation is half-heartedly fought in parliamentary democracies, was avoided. The reform was more brutal than it need have been; it caused a good deal of unemployment and pauperised large strata. But it saved the country. It might have failed, had the Bank Deutscher Länder not pursued an orthodox monetary policy, and controlled credit when needed. Monsieur Piettre discusses the repercussions of this policy on private credit, public finance, industrial developments, capital investments and agriculture, on population, refugees and unemployment. His text is accompanied and interspersed by 238 carefully selected and well-set-out statistical tables (there are no less than seventy-eight items in the annexe, many of them statistical). They corroborate it without making it cumbersome. It cannot have been quite easy for Monsieur Piettre to retain a very high degree of impartiality. For at the bottom of his mind he dislikes the restless rhythm of German economic life, which seems to him to aim at power but not at *le bien-être*. He would feel happier, had recovery not been complemented by a policy of economic liberalism. He rightly blames Germany for the absence of economic liberalism in the past, but regrets her successful present-day conversion to it, since it does not conform to the Keynesian gospel. He justly points out that, but for American help, it could not have succeeded. Western Germany actually received about $4

milliard under various heads. But she was not the most-favoured beneficiary of United States largesse. About $6 milliard went to the United Kingdom, who can hardly claim to have put them to better use.

A third part of about a hundred pages deals with " Associated Germany." It winds up with a cautious discussion of the Schuman Pact. This caution is well justified. Before the impact of the plan can have been felt, continental steel production has risen by leaps and bounds, and though German coal output is somewhat lagging, France's main grievance against economic geography is on the way of being removed : if the new processes of coking Saar and Lorraine coal turn out to be commercially successful, France's much-lamented dependency on Ruhr coke will have gone, and with it her strongest motive for proposing the Schuman Pact.

Monsieur Piettre's study is a credit to French scholarship. It provides an almost perfectly laid-out mine of information, from which future inquirers will dig vast masses of knowledge. André Siegfried has prefaced it by a short brilliant introductory sketch, which plainly demonstrates that the partition of Germany is pushing back the frontier of Europe to where it stood a thousand years ago. The question, whether a Continental European Union can replace this loss of half Europe, has not yet been answered.

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The Ruhr. By NORMAN J. G. POUNDS. (London : Faber and Faber, 1952. Pp. 283. 25*s*.)

THE general industrial character of few areas of western Europe is more widely known than that of the Ruhr. Equally, however, it is certain that the geographic and economic complexity of this great industrial region of Germany is appreciated only by a few. Professor Pounds' latest volume is devoted to a detailed study of the " historical and economic geography " of the region known as the " Outer Ruhr " and of the much smaller area within it, generally described as the " Inner Ruhr." The " Outer Ruhr " includes the great expanse of country lying between the River Lippe in the north and the Wupper and Ennepe valleys in the south, extending westward beyond the Rhine to include Krefeld and eastward to Dortmund and Unna. Most of this region, with a population of some 7 millions, is predominantly agricultural, but within it there are several highly concentrated industrial

areas. Of these the greatest is the "Inner Ruhr," defined as the small area of some 200 square miles stretching for 33 miles along the valley of the Ruhr from Duisburg in the west to Dortmund in the east. It is this area with a population of almost 4 millions which constitutes the centre of the Ruhr region and indeed of western Germany. It is unfortunate that the reader of this study must persevere until he reaches, at p. 218, the chapter on problems of "social" geography of the Ruhr before he obtains any clear notion of the precise geographical boundaries of the region to be investigated. Again, although the volume includes many good historical and special-purpose maps, the omission of a map of the ordinary Ordnance Survey type to depict the general physical features of the region is a serious disadvantage, particularly to the general reader.

After a brief but lucid introductory survey of the geographical and geological peculiarities of the region and of the historical significance of the Ruhr in the economy of Europe, the study proceeds first to consider the industrial history of the region at three distinct periods, namely the beginning, middle and end of the nineteenth century; secondly, to examine the nature and functioning of the region at the present time; and, finally, to assess the role of the Ruhr in the politics and economy of western Europe. In the historical chapters there is a wealth of information. The development of the iron and steel industry is traced from the craftsmanship of the sword-makers of Solingen to the industrial empires of Krupps at Essen and Thyssen at Hamborn and Mülheim; the growth and northward expansion of the coal industry can be followed from mediæval working of outcrop coal measures along the Ruhr valley to the recent grant of coal-working concessions north of the River Lippe; and the importance of the textile, coke, gas and electricity industries, of population and settlements and of the transport system is reviewed in a series of interesting sections. The chapters dealing with the present-day economy of the Ruhr investigate in greater detail the position and influence of the coal and iron and steel industries, the intricacies of the transport system and, less thoroughly, urban geography, water supply, population and land use, which are classified as "problems of social geography." The magnitude and resilience of the industries of the Ruhr are made abundantly evident. Thus, the output of coal, reduced from the peak level of 130 million tons in 1939 to 33 million tons in 1945, had revived to 103 million tons by 1950. Similarly (but it is necessary to search an earlier section for the facts), the pre-war steel output of the Ruhr, amounting to over

15 million tons a year had been reduced to insignificance by war-time destruction of plant and post-war dismantling of equipment, but has already exceeded 11 million tons a year, which was the level of production permitted by the Allied powers for 1949. Further, the bomb-damaged cities are being rapidly rebuilt, and the population increased by the influx of refugees, has adapted itself by wider dispersion to the rural areas within the "Inner Ruhr" area. Dispersion to the greater Ruhr area has been limited by the inadequacy of the transport system. In a final chapter Professor Pounds discusses the economic and political role of the great German industrialists before the First World War and in the inter-war period, the problems of the international control of the Ruhr and the place of the Ruhr in the European economy. He stresses the interdependence of the Ruhr and the world outside it, indicates the economic importance of the area's near monopoly of coking coal and coke, and argues that to limit the output of coal from the Ruhr or reduce its exports is to injure not only the economic well-being of Germany but also of the rest of Europe.

The modern tendency to study geography in combination with a variety of other subjects has produced a strange but interesting progeny of works which cannot be classified as geography, history, economics, sociology or politics but which contain something of all. This study of the Ruhr is certainly among the best of them.

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United States Economic Policy and International Relations. By R. F. Mikesell. (London: McGraw-Hill, 1952. Pp. vii + 341. 40*s.* 6*d.*)

This study of the United States' economic policies and their effect upon other countries is divided into three parts: a short survey for the period 1919–39; a single chapter dealing with the war period 1939–45, and a detailed discussion for the period 1945 onwards. The chapters dealing with the inter-war period give a useful account of the United States' financial, investment and commercial policies of that time. The chapter (Ch. 7) devoted to policies during the recent war contains brief references to the United States' war policies, her defence programme, Lend-Lease, U.N.R.R.A. and price control. The bulk of the book is devoted to the United States' economic policy and her interna-

tional relations since the war. The writer starts this part of his study with a full analysis of the United States' international monetary policy; he considers exchange rate and gold policy, the question of credits for the stabilisation of foreign economies and the general question of international investment. Following on this last an account is given of President Truman's "Doctrine," of the Marshall Aid programme and the O.E.E.C. Finally, the last two chapters are devoted to an account of the United States' post-war commercial policies and defence policy.

Professor Mikesell's account of America's international monetary policy is interesting and enlightening. The subject is treated carefully and in a live manner. A number of important points are clearly brought out. For instance, the author stresses that the United States, as the world's largest creditor, must see to it that changes in her net capital exports are accompanied by appropriate shifts in her current account, if world stability is not to be endangered. He also points out that after providing (for perhaps a very long period) net capital exports on a substantial and increasing scale, she will have ultimately to be willing to receive net merchandise imports, to take payment of her accrued dividends, just as Britain has done. European readers will appreciate the clear vote cast in the book in favour of a generous policy towards Europe. Nor does the writer fail to give a forceful criticism of United States' tariff policy. In accordance with this he makes a strong plea for a reduction in subsidies to American farmers. Another sound note running through the book is the emphasis on the interdependence of politics and economics. The student will not be allowed to muddle himself into thinking that the financial, investment or commercial policy of the United States, any more than that of any other country, can be independent of her political outlook.

Readers of the book, whether students in economics or the general public, will find that it contains an imposing catalogue of facts of the United States' economic policies and their effects on the world. But the presentation of these facts varies in quality. Chapters 9 and 10, dealing with post-war international monetary policy, make stimulating reading; while it is to be feared that the uninitiated, reading, for instance, the short account of the war-time period, might come away feeling that economics is a duller subject than it is.

In conclusion, a student wishing to learn about the impact of the United States' economic policy upon other countries will, if he persists, "find it all there." He will come away with a fair

understanding of the dominating influence of the doctrine of *laissez-faire* accompanied, however illogically, by a deep-rooted belief in the desirableness of tariff protection for American industry and agricultural subsidies. He will be familiar with the United States' crusade, through all her international negotiations, against "discrimination," leading to the relentless attack against Britain's Imperial Preference. He will be aware of the pursuit, both inside the United States and in some connections in the international field, of an anti-trust policy. Finally, the author brings out clearly the three big recent changes in United States policies which most strongly affect the other countries: First, the move away from isolationism which was consummated in the recent war. Second, the acceptance of American Government action in the field of foreign investment (leading to the acceptance of so-called "stabilisation loans" intended to restore political confidence, in addition to normal credits intended to pay for themselves). Third, the recognition by the United States Government of the rôle of Government control in foreign economies. Professor Mikesell indicates that the United States has recently taken a definite step away from the pure doctrine of *laissez-faire*. His book will tend to convince people at home and abroad not only that this step has been taken, but also that the United States Government should develop further a deliberate policy of economic aid to Europe.

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Residential Real Estate in Canada. By O. J. FIRESTONE. (Toronto: University of Toronto Press (London: Geoffrey Cumberlege), 1951. Pp. xxii + 514. 37*s.* 6*d.*)

Residential Real Estate in Canada is an attempt to consider the economic factors determining investment in houses in Canada from 1921 to 1949. The author sets out to examine changes in the total stock of houses resulting from demolitions, conversions, maintenance and new building, also changes in the number of houses owner-occupied and rented, respectively. He rightly argues that if he can get this information, he can estimate changes in capital invested in houses by an appropriate valuation formula. He could also investigate the relations between investment for owner-occupation and renting, respectively, and population changes, employment, government intervention and so on.

These are brave intentions, and Mr. Firestone equips his text profusely with tables of all the series he could possibly require,

while the whole of Parts III and IV and half of V are taken up with further tables and statistical notes. Examination of the latter, however, leads to disillusionment. Many of the imposing annual series in the tables in the text of numbers of houses, vacancies, types of tenure and the like are found to be based on the boldest, or rashest, estimates with very slender bases of fact. Until the last war information about these things was only available in Canada for the actual Census years, and there was no information in the Census about demolitions or conversions. Mr. Firestone filled in the gap on demolitions by generalising the figures for seven towns which happened to be available, making various modifications for rural areas. These estimates he applied to the censuses to give him estimates of gross intercensal increases in dwellings. He next used an index of annual disappearance of certain building materials to allocate these increases between each separate year; thus he created a hypothetical annual series of the number of houses built each year. I remain quite unconvinced that Mr. Firestone has succeeded in separating usage of materials for new house building from usage for other purposes; nor, incidentally, is any allowance made for changes in size or quality of houses. So far, of course, this is legitimate experiment, though for comparison with other series of industrial activity, the building materials series is as good as his "houses built" series.

But Mr. Firestone is more ambitious; he wants to get from the annual series of "houses built" other series for demolitions, vacancies, changes in owner occupancy and so on. The demolitions series he obtained as follows (pp. 393–4). The estimated ten-year totals of demolitions "were distributed annually according to an index which combined the trend of new dwellings constructed"—this itself is an estimate as described above—"with the trend of fire losses. It was reasoned that in times of large-scale building activity demolitions would be more numerous than in times of declining building activity. To take account of this factor the trend of housing completions was used. The other factor was concerned with destruction by natural causes. It was thought that fire losses might be indicative of such recurrent losses." The series for urban vacancies was based on annual data available for Toronto, Montreal, Winnipeg and Ottawa. The sample was reasonable in size, covering 31% of the urban population in 1941, but we are left in doubt as to whether it was truly representative, for we are told, "No population weighting was used since the two smaller cities covered were considered to be more representative of the balance than the two larger ones"

(p. 380). The annual series for changes in numbers of owner-occupied and rented houses were calculated simply by straight-line interpolation from the percentage distribution at the Census dates (p. 398)!

Thus the basic annual series are built on conjectured, or estimated, annual distributions of the whole intercensal changes, themselves estimated in some cases. Quite simple alterations in the assumptions made would imperil the whole pyramid and the relations between the series. However fascinating these statistical ventures may be, they cannot be used for statements of fact or for analysis of economic causation. They may be right, or they may be wrong. Mr. Firestone in his enthusiasm forgets this too often in the text, omitting to indicate in his tables that most of his figures are estimates, and he also quotes figures from his tables as though they were established facts, as for instance, on p. 53, "What happened in 1934 was that 25,900 houses that had been vacant in 1933 were occupied again, making it possible not only to put to use more rental accommodation than was obtained through new construction, but also to add 16,800 units to the total number of owner-occupied dwellings."

It is to be regretted that Mr. Firestone did not devote himself to more cautious handling of the considerable amount of genuine information that he has assembled in this book to which it is impossible to refer in a short review, such as budget data. He evidently has a great deal of knowledge about the house market which he could have used to advantage. On the other hand, all his ingenuity in constructing statistical series leaves the careful reader convinced that his data are quite inadequate for the problems with which he hopes to deal. I suspect that Mr. Firestone himself realises this, for the chapters concerned with his main subjects peter out when it comes to interpreting the series he has been at such pains to calculate.

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Coffee, Tea and Cocoa. An Economic and Political Analysis. By V. D. WICKIZER. Stanford University Press (London, Geoffrey Cumberlege). Pp. 497. 40*s*.)

THIS is an excellent book, cool, factual and well documented. It is the first of a series of studies of war-time management of food and agriculture in the Second World War, now being prepared under the ægis of the Food Research Institute of California

with financial support from the Rockefeller Foundation. The author has already published studies of pre-war control schemes for tea and coffee. He has now covered the war and post-war period up to the end of 1950, not only for tea and coffee but also for cocoa.

During the war tea and cocoa were mainly controlled from London, but coffee, apart from the Ministry of Food's contracts with British East Africa, was controlled in Washington. The New York price of Brazilian coffee was about 7 cents per pound in August 1940. It was stabilised during the war years at 12 cents, rose to 27 cents in 1948/49 and, after doubling in ten weeks at the end of 1949, has remained at about 54 cents during the last two years. The New York price of Accra cocoa, which was about 5 cents before the war, was stabilised at just under 9 cents during the war and, after removal of price ceilings in 1946, shot up to 50 cents at the end of 1947 and is now about 30 cents. By way of contrast Ceylon tea prices (f.o.b.), during twelve years of bulk purchase by the Ministry of Food, rose gradually from 15*d.* per lb. in 1939 to 32*d.* at the end of 1952. Since decontrol they have remained fairly steady.

Changes in world production, visible stocks and consumption per head that accompanied these price movements tell only half the story. More interesting is the account given of the intervention of Governments, the activities of producers' marketing boards and, in the case of coffee and cocoa, the struggle between buyers and sellers to influence the market in their favour. In August 1947 a New York market bulletin advised U.S. cocoa manufacturers to reduce their stocks and buy from hand to mouth "in order to drive prices down from 30 cents to 15 cents." But instead, "prices continued to rise, speeded by the covering of shorts who had expected a price drop," to an all-time peak of 55 cents in November 1947. The single seller of British West African cocoa, who was accused of rigging the market, had in fact refused to speculate and had sold steadily as supplies of new crop came forward. For the last five years the West African Marketing Boards have fixed their buying prices to producers just before the harvest, and have then taken the risk of the market. Part of their profits have been used to pay for the eradication of swollen-shoot disease. In November 1952 it was stated in the House of Commons that in the Gold Coast 15 million out of about 40 million affected trees had been cut out, but in spite of this production was likely to be maintained at current levels for the next five years.

Towards the end of 1949 there was a "famine scare" in the New York coffee market when spot prices doubled in ten weeks. This was partly due to exaggerated reports of shortage, but partly to bear speculators miscalculating the probable effects of devaluation. When grocers and panicky housewives started to over-buy and hoard, the disappointed shorts were caught in a squeeze. Senator Gillette charged that "somebody, somewhere, somehow had rigged the market." But again it appears that speculators who had made the mistake of selling short were partly responsible for rigging the market against themselves.

The author pays a tribute to British management of the tea trade during the war which he says "was notably efficient and effective." Tea was not fully decontrolled until 1952, when the Ministry of Food had been able to build up large enough stocks to enable a free auction market in London to function smoothly. There is little speculation and no organised futures market for tea; tea, being a leaf crop, is less liable to annual fluctuations in supply than coffee berries and cocoa beans.

The book ends with a discussion of future problems of production, consumption and marketing. National habits are slow to change. In 1949 $2 million was voted by producers and traders for promoting United States coffee consumption, and in 1950 the tea interests countered with a campaign to cost $5 million. In the U.S. the flavour of tea is often spoilt by the practice of "dipping a tea bag in warm water." In the United Kingdom it is all too common "to brew a concoction that has small right to be called coffee." Both tea and coffee are exposed to growing competition from soft drinks like Coca-Cola, world consumption of which has recently been estimated at 50 million bottles per day!

A major problem that confronts all three industries is the steady rise in costs of production. Large profits have been and are still being made; but rising labour costs, particularly in the tea industry, where they are linked with high prices for rice and clothing, are eating into profits. Tea as a plantation industry is more vulnerable to rising costs than cocoa, which is mainly grown in peasant economies, and attempts to enforce reduction in wages may provoke Government intervention.

The author discusses the question of international commodity agreements for tea, coffee and cocoa. He expects the pre-war Tea Regulation Scheme to continue in some form, but forsees little prospect of hammering out an agreed scheme of international regulation for coffee and cocoa. But national

marketing schemes in West Africa, Brazil and elsewhere are likely to remain; and if they can be managed on business lines without undue political interference—an important proviso—he thinks they may play a useful part in promoting efficiency, and stabilising and improving farmers' incomes.

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Works and Buildings. By C. M. KOHAN. History of the Second World War, United Kingdom Civil Series, edited by W. K. HANCOCK. (London: H.M.S.O. and Longmans, 1952. Pp. xvi + 540. 32*s.* 6*d.*)

THE difficulty in reviewing this work is precisely the same as the difficulty the author found in organizing it, namely that the enormous mass of material does not fit comfortably into any neat set of departmental or operational categories. Major Kohan has succeeded in making an intelligible picture by keeping clearly before his readers three main problems: first, the extent of the Departments' demands upon the building and civil engineering resources of the Kingdom; second, the growth of central control from the cold-war phase of the late 1930s to the end of the war; third, the relations between the industry and the government.

From the administrative point of view (that of preparation in good time for the next war), the core of the book is in pp. 69–238. The chaos during the First World War, remedial proposals and their result in the creation of the Ministry of Works in 1940, the limits on this Ministry's effectiveness in 1940–42, and the transfer of effective control to the Minister of Production in 1942 are lucidly set out, and constitute the factual, historical basis upon which the new War Book must be compiled.

It is not for the historian to suggest the lessons. The reviewer, however, is at liberty to ask the questions suggested by his author's excellent historical material. How effective or how silly was each of the specific controls imposed during the war? How far was each defeated by evasion, or how far did it create black markets? (this is only an alternative way of asking how silly they were). Major Kohan has many illuminating incidental comments, but one would like to see a general assessment.

Were the relationships ultimately established between the Ministry of Production, the Ministry of Works, the Service and Supply Departments, and the industry satisfactory and capable

of being run in immediately on the outbreak of a more total (if the solecism may be excused) war? Experience suggests that the anomalous position of the Ministry of Production, certain Departments' direct access to the Cabinet and the competition for materials common to "Works" and other forms of war-like production present administrative problems not yet solved.

How did the contracting methods of the Departments stand the test? In particular, what about the effects of the cost-*plus* method of payment in comparison with the price-for-the-job payment? And further, were the effects upon sub-contractors of the arrangements made with main contractors economical or not?

Have the implications of the following quotation (p. 4) sunk in?

> "That the building industry without straining its resources could carry through whatever emergency programme was likely to be laid on it was never doubted by its leaders. Of deeper concern both to workmen and employers was the need to safeguard the long-term interests of their vast industry."

Admittedly, it is not the historian's business to attempt to answer questions such as these; indeed, the answers, if any, may well be official secrets. What the historian has charted (notably in Chapters XIII and XIV) is the constant struggle of expanding service and supply departments to nobble building labour and materials on a lavish scale, and (notably in Chapter XI) the efforts of old-established departments to evade control; and, against these resistances, the central effort, not always wholehearted, to impose control. Not the least interesting part of the book deals with the alternation between "allocations" and "priorities" (Chapters IV and V).

This volume maintains the high standard of the previous volume of the Civil Series in respect of its exact and compreprehensive detail.

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International Economic Papers, No. 2. Translations prepared for the International Economic Association. (London: Macmillan, 1952. Pp. 232. 15*s.*)

THIS volume, prepared with the help of grants from UNESCO and the Rockefeller Foundation, contains translations of ten

important papers that have appeared at various times in non-English-language periodicals, and are consequently difficult of access to the British reader.

All are recent papers, with two very important exceptions. Here is to be found the famous article by Jules Dupuit, so often mentioned in British works on history of theory, but so rarely read by British students, on "The Measurement of Utility of Public Works" (*Annales des Ponts et Chaussées*, 1844). Here also is Ladislaus von Bortkiewicz's "Value and Price in the Marxian System" (*Archiv für Sozialwissenschaft und Sozialpolitik*, 1907). With the same author's article on "The Correction of Marx's Fundamental Theoretical Construction in the Third Volume of *Capital*" recently made available by P. M. Sweezy in the Appendix to his edition of Böhm-Bawerk's *Karl Marx and the Close of his System* (New York: 1949), the English-speaking student of Marx now has available the principal theoretical contributions of this most original Marxian scholar. Bortkiewicz was one of the few "bourgeois" economists to take Marx seriously. Thoroughly "classical" (in Marx's sense) in his fundamental viewpoint, Bortkiewitz greatly admires Ricardo, and is not disinclined to take the labour theory of value as a starting point for the theory of price and income-division. Thus he accepts, provisionally, Marx's distinction between "value" (based on labour-time) and "price" (based on commercial cost reckoning). But, being a better mathematician than Marx, he submits the whole theoretical apparatus of *Capital*, Vol. III, Part II, to a thorough-going mathematical analysis, in the course of which he not only derives the correct formula for the transformation of "values" into "prices" but also throws light on the distinction between variable and constant capital (which he shows to be not a qualitative but a quantitative distinction, based solely upon differences in the period of turnover of capital) and upon the alleged tendency to a fall in the rate of profit. On this latter point, Bortkiewitz is able to demonstrate mathematically the incorrectness of Marx's assertion that the increasing physical productivity of labour necessarily reduces the average rate of profit (although he admits that under some circumstances this rate may fall). Incidentally, he points out Marx's error in assuming that the rate of surplus-value remains constant while the productivity of labour is increasing. Bortkiewitz's final conclusion is that "value" calculations are harmless, if conducted with mathematical accuracy, but unnecessary, since "price" calculations without the underpinning of labour "values" are adequate to

establish the reciprocal relations of prices, wages and the rate of profit.

The remaining articles are of various kinds. One, "Some Remarks on Economic Accounting and the Law of Value," by Tadeusz Dietrich from *Ekonomista* (Polish), 1950, links up with the preceding article, since it deals with the value calculations of a socialist state (*e.g.*, the Soviet Union) and of a People's Democracy (*e.g.*, contemporary Poland). It describes the "economic calculation" (Russian: *khozraschet*) of such an economy, based on economic planning and the conscious use of the law of value as opposed to the "commercial accounting" of a capitalist economy, based on profit-seeking and the "anarchy of production." As far as the reviewer can make out, the principle of socialist pricing is cost of production, based on wages cost at an assumed normal level of labour productivity, plus overhead cost, similarly determined, plus turnover tax, which redistributes the surplus product so as to "become the basis of economic progress and of the increase in the well-being of the working class." Interest on fixed capital is ignored. No indication is given here of the quantitative determination of turnover tax; but later in the same article there is a hint that selling price is determined independently of cost of production and that turnover tax adjusts the difference between the two.

Of cognate interest is Erich Preiser's "Property and Power in the Theory of Distribution" (from *Synopsis, Festgabe für Alfred Weber*, 1949). It attempts to show, in opposition to Böhm-Bawerk's *Macht oder Ökonomisches Gesetz*, that the distribution of property affects not only the personal but also the functional division of income, through the medium of elasticities of supply and demand. "Behind the elasticity of supply lies the power embodied in property."

"Risk and the Rate of Interest," by Pierre Massé (from *Économie Appliquée*, 1951) is a contribution to the theory of general equilibrium, with interest appearing at the three margins of lending, hoarding and investing, and with uncertainty explicitly taken into account. One *obiter dictum* of the author is notable: "We might even conjecture that in business matters the function to be maximised is not profit alone, but rather, a complex of profits, reputation and a good conscience."

"The Illusion of Fixed Costs," by H. A. A. de Melverda, from *De Ingenieur* (Dutch), 1950, argues from recent American data on railway transport to the effect that fixed costs are a much smaller proportion of total cost than has generally been supposed

and tend, in the long run, to disappear, so that ultimately all costs are variable. The author concludes that cost depends upon a large number of variables and that this multi-variability of costs is one of the causes that produce the illusion of fixity.

In "Principles of Production Planning" (*Giornale degli Economisti*, 1949), G. U. Papi develops a theory of investment based on the works of Fisher (*The Theory of Interest*) and of Keynes (*General Theory*). Among other things, he considers the place in production plans of the marginal principle and of discounting, unforeseen changes in prices and in the rate of interest, diseconomies of scale, and the compatibility of falling average costs with competitive equilibrium.

Kjeld Philip, in "Structural Changes in the Labour Market and the Mobility of the Wage Level" (from the Danish, 1951), discusses the formation of wages in a labour market characterised by large organisations of workers and employers and by statutory regulation. He considers four factors: shiftability (*i.e.*, the possibility of employers' passing on wage changes in the form of price changes); substitution (of other factors for labour); changes in the level of employment; and changes in real wages.

D. J. B. Schouten, in "The Wage Level, Employment, and the Economic Structure" (Dutch, 1951) examines mathematically the effect of wage changes upon employment, using the concepts of the multiplier (both domestic and international), price flexibility, elasticity of export prices and taxation policy.

Finally, we have Eli Heckscher's Memorial Paper on David Davidson, read before the Swedish Royal Academy of Sciences in 1951. Besides giving a useful summary of Davidson's life and works, it provides interesting background information on the development of Swedish economics during the late nineteenth century.

In a work of this kind, where separate articles have been translated from several different languages, problems of transliteration are particularly difficult. Thus, Russian names appear in German dress (*e.g.*, Shisn for Zhizn, p. 53, n. 118) and in Polish dress (Dietrich, *passim*). Nevertheless, the editors should aim at consistency. In an English book the English convention for transliterating Cyrillic should be observed.

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NOTES AND MEMORANDA

Ceteris Paribus For Supply Curves [1]

§1. In any empirical study of economic phenomena, such as partial equilibrium supply curves, some conditions are assumed to be unchanging. It is the purpose of this note to make explicit the more important constants that must be considered in the investigation of supply, to indicate that the list generally considered is incomplete and to discuss the relative merits of two alternative means of rectifying an inconsistency in the completed list. The note deals with empirical supply curves of products—that is, of commodities that have undergone some sort of transformation or production.

In order to study the effects of changes in demand by consumers, it is desirable that, during the investigation, any alterations in quantity and price be attributable only to these demand changes. By using a supply schedule that shows the relation of the minimum prices at which different amounts are offered by producers when faced with different demands, it is possible to determine the consequences of the changes in demand. It is desirable that the supply schedule itself should be immutable during the analysis so that the effects of demand changes may be isolated from other variations.

As quantities and prices are assumed to vary along the supply schedule in a determinate manner, a mathematical model may be envisioned that will " explain " the relationship. In price theory this model is one of maximising behaviour on the part of the individual firm. The firm operates within such limitations as existing technology and the supply conditions of productive services. Some features of these limitations are not allowed to vary; they are the parameters of the model. These parameters have been assigned a variety of names in the literature of economics, such as the " givens," " predetermined variables," " other things being equal " and " things impounded in *ceteris paribus*."

Any list of parameters is necessarily arbitrary. However, this note will try to define those variables that seem to be impounded in *ceteris paribus* in current price theory.

§2. Professor Milton Friedman has suggested classifying impounded variables as follows: (*a*) variables that both affect

[1] The author is very grateful to Professor Milton Friedman, of the University of Chicago, and to Professors D. H. Flanders and E. T. Weiler, of the University of Illinois, for their criticisms and many valuable suggestions.

and are affected by the variable under study; (*b*) variables that are little affected by the studied variable, but materially affect it; (*c*) variables that neither significantly affect the variable under study nor are significantly affected by it.[1] This classification will be useful for discriminating the long-run from the short-run parameters.

§3. Two theoretically distinct, although empirically arbitrary curves will be discussed—the short- and long-run curves. The short run is that interval in which there is time to vary production, but not enough time to alter the plant to adjust to a different level of output. All goods in this time period are newly produced for sale: there is no reservation demand. The long-run period is defined to be that time long enough to use any of the known productive combinations (and, hence, a more elaborate production function than in the short run), but not long enough for all productive services to become almost perfect substitutes. If factors did become perfect substitutes, the supply curve would have infinite elasticity. This extreme is uninteresting from the viewpoint of empirical work.

SHORT-RUN SUPPLY-CURVE *CETERIS PARIBUS*

§4. To the author's knowledge, the most complete discussion available of the *ceteris paribus* for supply curves is in an unpublished paper by Milton Friedman.[2] In it, Friedman suggests that the parameters for the short run are: (1) the state of the arts, (2) the prices of products that are either close substitutes or highly complementary in production, and (3) the supply curves of factors of production for the product considered.

Friedman's third point needs no explanation; the first two require examination. The significant part of the "state of the arts" which must remain constant is simply the production function for the product. This function, in the short run, includes all possible productive combinations that do not require changing the plant. Other changes in technology in the society, which affect neither the quality nor price of the factors nor the ways of combining them, may vary in any way whatsoever. These changes belong to the third class mentioned above (§2).

Products that are either close substitutes or highly complementary in production belong to the first class of variables.

[1] Milton Friedman, "The Marshallian Demand Curve," *Jour. Pol. Econ.*, Vol. LVII, No. 6 (December 1949), p. 470.

[2] Milton Friedman, "The Relationship Between Supply Curves and Cost Curves" (notes used in advanced-price theory course, The University of Chicago, 1950), pp. 2 f. (Hectographed.)

While it may be useful for some problems to hold their prices constant, it is not necessary to do so. It is also possible to impound the quantities of these products; while a third alternative is that the demand curves for the closely related products remain unchanged. The first two choices of impounding prices or quantities really reduce to perfectly elastic and perfectly inelastic demand curves for the products. While these extremes are improbable, they should not be forgotten as approximations in empirical work.

A fourth parameter is expectations. Although supply curves are treated within a static framework, perfect foresight is neither basic nor desirable for the theory.[1] Consequently, expectations must be introduced into the analysis. If the expectations change during the period of analysis, the supply curve is no longer determinate. Thus, in Hicksian phraseology, there must be a constant elasticity of expectations.[2] Although it is not necessary, this elasticity is usually considered to be unity.[3]

An example may clarify the meaning of these four impounded variables. Suppose a scholar produces two products, text-books and original work. If the supply schedule of text-books from this producer is to be described, it is reasonable that the production function remain constant during the period (*i.e.*, the scholar must not suddenly become more intelligent). Secondly, let the demand for related products be impounded (were the scholar to receive greater remuneration for his original work, he might stop producing text-books entirely). Furthermore, the supply schedules of productive services should not change (such as a fall in wages making possible the employment of a secretary). Finally, were the scholar subject to fluctuating expectations about college enrolment, the supply schedule would be indeterminate.

Ceteris Paribus for the Long Run

§5. Short-run supply curves have been dealt with in an unequivocal manner. Long-run curves present greater difficulties. In particular, long-run studies become involved in phases of general equilibrium analysis. Some variables which, in the short run, neither affected nor were affected by output

[1] Nicholas Kaldor, "The Equilibrium of the Firm," Economic Journal, March 1934, p. 70.

[2] J. R. Hicks, *Value and Capital* (2nd. ed., London, Oxford University Press, 1946), p. 205.

[3] Fritz Machlup, "The Theory of Foreign Exchanges," *Readings in the Theory of International Trade* (Philadelphia, The Blakiston Company, 1949), p. 109.

changes and had been in Friedman's third category (§2) now fall into the second as they affect the supply schedule.

§6. For the short period, only those supply curves of productive services used in the fixed-plant production functions for the product are in the second category. All other factors are in the third class (*i.e.*, shifts of curves in the markets of these variables do not affect the product under study). However, this separation does not exist in the long run.

Many productive services may be transformed into other productive services in the long run; consequently, a change in the demand or supply of a productive service not used in making the product will affect at least some supplies of those productive services that are used. A striking example is a change in demand or preference for one type of labor and the resultant changes in the supply of other kinds of labor.

If these productive-service markets are to be impounded, then certain general equilibrium qualifications are inherent in long-run partial equilibrium analysis. This proposition is neither new nor revolutionary; [1] what is of interest is the actual selection of the general equilibrium conditions. Although the author believes the set of constants that follows is almost too extensive and confining for empirical work, it does seem to be the set implied by neo-classical thinking. A set that could be more closely approached in the real world would be preferable.

§7. Suppose a quasi-stationary state is postulated in which the only independent variable is tastes and preferences for final products. These demand changes may be broken into three types. The first is a change in demand for the product considered. It is this movement that traces out the supply curve. The second is a change in taste for other products that does not involve any net movements in the demands for individual productive services. The third is one which does not immediately affect the demand for the product, but does cause changes in the prices of productive services. Such an influence, acting through the ultimate substitute or complementary relationship of almost all productive services, would cause the product supply curve to shift. Therefore, although this kind of alteration is common in the real world, it must be excluded in the model.

If this sort of stationary state is accepted, then two other parameters may be listed. These parameters are in Friedman's second class.

[1] George J. Stigler, *The Theory of Price* (New York, Macmillan Co., 1948), pp. 28 f.

§8. Most, if not all, technological change is to be impounded. Any advance in technology would change some demands for productive services and, by the reasoning above (§6), would affect those factor-supply schedules that must be held constant.

§9. It is also necessary to consider money income. According to Keynesian analysis, a change in money income would alter the rate of interest and, thus, the price of a productive service.[1] For the neo-classicist, there would be a direct price movement. If all prices rose by the same percentage, there would be a parallel vertical movement of the product supply curve; under any other circumstance the shift of the curve cannot be determined *a priori*. Either of these two lines of thinking leads to the conclusion that it is necessary to impound money income.

To summarise: if the supply schedules of productive services used in the product are not to change in the long run, then it is necessary to impound: (1) variations in taste not directed towards the product, but altering the demand schedules of productive services; (2) money income; and (3) technology.

§10. These parameters all seem to be necessary; yet, reflection quickly shows a theoretical inconsistency. This inconsistency, and two alternative assumptions which will rehabilitate the system, may now be demonstrated.

When demand changes for a product, quantity can only increase by a decreased use of resources in other production. Money is diverted from these other uses, and the system will reach a new equilibrium with unchanged technology (§8) and unchanged money income (§9). Under the definition of the long-run time period (§3), however, productive services are not perfect substitutes. From this definition (which is basic to neo-classical price theory), it is implied that the supply schedule will take on different shapes, depending upon the resources that are released. For if the resources which go into a given dollar's worth of product A are imperfect substitutes for an equal money's worth of product B, there is no reason whatsoever to assume a shift in demand from A to C will result in the same output of C as an equal shift from B to C. For example, a shift from cigars to cigarettes would yield a different output of cigarettes than if the shift had been from chewing-gum.

§11. There are two solutions to this apparent impasse. The first suggestion is one that seems to be implicit in neo-classical theory. Marshall's customary treatment of small industries with

[1] John Maynard Keynes, *The General Theory of Employment Interest and Money* (New York, Harcourt, Brace and Company), Bk. IV.

no great peculiarities may be interpreted as implying the assumption that the resources released are equally substitutable, regardless of the product from which they are released.

The rationalisation for this assumption is a bit nebulous (and it may be for this reason that the statement has been avoided). In the first place, by definition, productive services cannot be perfect substitutes; nevertheless, they must be substitutes to some degree if the supply curve is not to be perfectly inelastic. An intermediate degree is required. This degree would be achieved if the released resources are technologically at a distance so great, that by the time the reactions and interactions have filtered through the economy, the effect on the factors used in the product is essentially the same, regardless of the particular resources freed in the first instance. This author has been unable to find or develop a more rigorous statement justifying the assumption.[1]

§12. The alternative to the Marshallian assumption is one that provides for the release of resources from all other products. Rather than the shift from a single distant product, resources from all other products may be freed in some standard fashion. The simplest assumption is a uniform release from other products. An example of this kind of release would be a government maintaining a balanced budget in a closed economy. If the government were to finance its expenditure upon a product by means of a sales tax on all products, then a unique supply curve may be traced for the product. A variation of this assumption would be a redirection of income: the demand for other products would shift because of the income effects of the decreased expenditure apportioned them. The analogue of the above example would be an income tax financing the government's purchases of the product.

There is no way of telling the exact relationship between the supply curves formed under the Marshallian assumption and from one of the "all products" assumptions. In conjunction with the parameters stated above (§6–9), the use of either kind of assumption will yield a consistent supply curve.

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[1] The assumption may be made a little more palatable by impounding a specific list of products that are closely related in production, as was done for the short-run curve. This restriction would at least force some filtering on the system. Friedman has done a similar thing, for a different reason, with closely related commodities in demand for his exposition of the demand curve. Milton Friedman, "The Marshallian Demand Curve," *op. cit.*, p. 465.

Fluctuations in Incomes of Primary Produces

THE history and present position of the Nigerian and Gold Coast Marketing Boards in relation to the economies of these territories is much more complex and interesting than the article by Mr. Bauer and Prof. Paish in the December issue of the ECONOMIC JOURNAL suggests. Some of the reasons for thinking this, and for doubting the appropriateness of a formula which stabilises the money incomes of export producers, will be briefly indicated:

(*a*) It is broadly true that, except in 1948–49, post-war sterling prices of cocoa, groundnuts and palm produce (as well as of cotton) continued to rise, *against all expectations*, until mid-1952 (cocoa) and autumn 1951 (groundnuts and palm produce). Although the prices received by the Boards for groundnuts, palm produce and cotton, under their long-term contracts with the Ministry of Food and the Cotton Commission, lagged behind world prices, these prices also rose greatly. During the whole of this period up to the Korean war economists were practically unanimous in expecting a slump to be round the corner. If one pays an insurance premium and is not burgled who is to be blamed?

(*b*) This point should be made, but not over-emphasised, for from the point of view of the individual peasant producer the insurance premium was very large indeed, although there was a hope that sooner or later he would get much of it back. But the willingness of the Boards to undertake cyclical price stabilisation, extending over some such period as five to seven years, could surely not be judged until they had had time to build up adequate reserves and until world prices had really started to fall. Now that they have started to fall what does one make of the situation?

(*c*) One conclusion is that generalisation about all the Boards is unwise. The Nigeria Palm Produce Marketing Board has fixed its producer prices for 1953 at a level which it estimates will cause a drain of £2 million on its reserves: that Board now evidently regards price stabilisation as a duty. The Gold Coast Cocoa Marketing Board, on the other hand, reduced its 1952–53 producer price by one-eighth, mainly on the ground that although world cocoa prices had fallen severely it must conserve its colossal reserves until the real slump came. It is beyond dispute that this Board (which is in a much closer relationship to the Gold Coast government than that of the Nigerian Boards to the Nigerian government) is not at present concerned with price stabilisation, but rather with the conservation of its resources

against what one ventures to call an old-fashioned slump, as well as with the need to retain the extremely high scale of cocoa export duty. It appears that in its concern with these two aims it is being over-cautious.

(*d*) It is believed that the Nigeria Groundnut Marketing Board was inclined to raise its producer price for the 1952–53 crop (although the Ministry of Food's average buying price was almost certain, such is the nature of the long-term contract, to be lower than in 1951–52) but that it did not do so because of the possible effect on prices generally in Nigeria. If the Board's groundnut producer price rises, then the price paid by Nigerian groundnut consumers rises also. Prices of locally grown foodstuffs and imported consumer goods may also rise, though it seems that the latter are now sufficiently plentiful for this not to happen. Whether, in general, this anti-inflationary argument against raising producer prices is a good one it is impossible to say, for the necessary economic facts and statistics are lacking. But as most farmers in the groundnut-growing area of Northern Nigeria are believed to grow some groundnuts; as many of them buy from and sell to one another; as almost all groundnut farmers also grow other food crops; and as very little is known about the influence of expected price changes, or of the weather, on the balance of groundnut and food crop production—for all these reasons generalisation is dangerous.

(*e*) Bearing in mind that a large proportion of the Nigerian groundnut crop (as well as of the palm oil produced) is consumed locally—the (admittedly tentative) results of the first sample census of agriculture suggest that in the bad crop-year 1950–51 the proportion was about one-half—the proposal that the Board should aim at stabilising the money income derived from selling for export requires much more justification. Indeed, one has a feeling that in making this proposal Mr. Bauer and Prof. Paish were thinking of cocoa, all of which is exported as bean or butter. Have they not overlooked the enormous variations in groundnut purchases for export and the present impossibility of forecasting the size of this annual peasant crop (grown in plots of an average size of perhaps 0·4 acres) any length of time in advance? In 1950–51 the Board's groundnut purchases for export were 143,000 tons; in 1951–52, possibly mainly owing to favourable weather, they were over 400,000 tons; as late as November 1952 one authority put the 1952–53 figure at over 600,000 tons which was about 200,000 tons too high. Would it really be desirable to aim at reducing the producer price considerably in response to such

large fluctuations, bearing in mind that the interchangeability of oils and fats is so great that the sterling groundnut price might be little affected (Nigerian railing difficulties apart) by such fluctuations? And reverting to the question of sale for local consumption, one must remember that the proportion consumed locally will be liable to great variations with the size of crop.

(*f*) It may well be that such is the universal reluctance of statutory bodies (including the U.K. Unemployment Insurance Fund) to part with their funds, that some obligation to do so over a period should be imposed on the Nigerian and Gold Coast Marketing Boards by amendment of the local Ordinances under which they operate. This obligation might or might not be called price stabilisation, but any formula should certainly distinguish payments to producers and the use of funds for other purposes such as development, education or research. It is unlikely, so varying are the political and economic circumstances, that the same formula would do for each Board.

(*g*) Mr. Bauer and Prof. Paish refer on p. 765 and elsewhere to the tendency of all regulation schemes to reduce output. This is unproven for the West African Boards: it may be true, or it may not be. It is unlikely to be more than a slight influence for cocoa in the short term as it takes some seven years for a young tree to come into bearing. But the assertion overlooks something which *is* proven—the astonishing improvement in the quality of Nigerian cocoa, and more recently of palm oil, which has resulted from the payment of differential prices by the two Boards. The improvement in the quality of palm oil is indeed one of the most important events in the economic history of modern Nigeria.

(*h*) But even if the assertion could be proved, the level of export production which it was desirable to bring about would still be open to doubt. For Nigeria and the Gold Coast have, in a sense, one foot in the world economy and one outside it, and it is possible for them to produce too much for export. It is true that neither country would be likely, in the absence of compulsory saving such as is effected by the Marketing Board system or by high export duties, to have a large favourable trade balance for any length of time, for there are few private savers; but an increase in exports can easily give rise to serious internal distortions because the goods which the producers of export crops most require in larger quantities are cheap tropical foodstuffs of a kind which on the whole do not enter into world trade. This is an interesting subject that has been little considered by economists.

(*i*) Even if it is agreed that several of the Boards, in particular

the Gold Coast Cocoa Marketing Board, are insufficiently enthusiastic about disbursing their funds, one should not overlook the benefits that these funds have given and will give. The three Nigerian Regional Production Development Boards are financed by the Marketing Boards, being allotted 22½% of the Boards' surpluses each year. If it is true, as Mr. Bauer and Prof. Paish say, that the present high scale of the Gold Coast cocoa export duty could not have been imposed unless the Marketing Board had paved the way, then it is also true that it is the Board which has enabled the Gold Coast government to propose making a contribution towards the Volta River Project of a size appropriate to a country nearing self-government. It is partly because the Marketing Boards' reserves give governments and people a general sense of security against external calamity that the political situation in the Gold Coast and in Nigeria is so full of hope.

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A SUGGESTED AMENDMENT TO THE INTERNATIONAL MONETARY FUND CHARTER

THE end of the post-war period which was supposed to be the "transition" to a peace-time international economy came with the passing of 1952. The International Monetary Fund Charter provided for the use of "emergency" techniques during the five-year period after its inauguration in 1947; but because world trade and payments conditions are not yet conducive to the operation of the Fund mechanism as envisaged at Bretton Woods there is some demand that the role of the Fund be re-examined. Harry D. White, in early 1948, saw that the Fund was not performing the functions for which it was created, and proposed an extensive amendment of the Articles of Agreement.[1] His suggestion was apparently not taken seriously by Fund officials, but in view of the recent pleas for an expansion of Fund resources and a new approach to its lending policies, a discussion of the amendment seems appropriate.

The purpose of the amendment was to provide an international medium of exchange to supplement the Fund's resources so that trade could be balanced at a higher level. The amendment

[1] White, at this time, was consultant to the Mexican Government. He had previously been the U.S. Executive Director on the Fund and was the principal author of the plan which culminated in the Fund Charter. His proposal was found among a collection of papers presented by Mrs. White to the Princeton University Library.

entailed the establishment, within the Fund, of "Trade Dollar Accounts" for each member so desiring. A Fund member was to be eligible for a TD Account if it was eligible to use the regular resources of the Fund; members having continued export surpluses were exempt from membership if they so desired, thus allowing the United States to remain outside and not have its exports increased because of the amendment.

The operational mechanism White proposed was somewhat similar to that created under the European Payments Union two years later. Each quarter, the members participating in the new scheme (those having active "Trade Dollar Accounts"—designated as TD members) were to be assigned a "Trade Dollar Award." These awards were to be the excess of the increase in imports from over the increase of exports to all other TD members (both volumes to be net of long-term capital movements) during a "computable period" (the second preceding quarter) compared with the same quarter in the base year (the calendar year preceding the acceptance of the amendment). Those member-countries having such *net import increases* were awarded a "Trade Dollar Credit" of the magnitude calculated,[1] and those having *net export increases* were given a "Trade Dollar Debit," if in each case both exports and imports increased over the base period.[2] Those countries having Credit Awards were allowed to draw TD Drafts to the amount of their credits, and those having Debit Awards had to accept these drafts up to the amount of their debits before being able to draw drafts themselves (with one exception, noted below). The awards were limited in amount by both Total TD Quotas and Quarterly TD Quotas. Total TD Quotas were to be set to designate the maximum that any member could have outstanding as a creditor or debtor at any time throughout the duration of the amendment.[3] The Quarterly TD Quotas

[1] If the aggregate of TD Credit Awards exceeded the aggregate of TD Debit Awards, the former were to be scaled downward proportionately among members so as to equal the Debit Awards.

[2] It is not clear what would be done with a country having an absolute decline in both imports and exports. White wrote (with a question mark in the margin) that after one year of operation "any minus quantity in a member's quarterly TD imports shall be added (algebraically) to subsequent quarterly TD imports until the result is a plus quantity; and any minus quantity in TD exports shall be added (algebraically) to subsequent TD exports until the result is a plus quantity." He also proposed that if a member's TD imports were less than those of its base period for eight consecutive quarters, its base period should be changed.

[3] The suggested volume of the Total Quota was a member's "imports during the base year from all other members having active TD Accounts minus estimated net capital imports from those countries during that period." Quotas were to be open to renegotiation after five years.

were the maxima that each country could be given as a Credit or Debit Award.[1] This restriction by quarterly quotas was imposed to keep the magnitude of credits within the capacity of each country to repay over a stipulated period. If the award that was calculable from the net increases in imports for any country was greater than its quarterly quota, only the quota amount could be awarded, but the excess would be carried over cumulatively into future quarters.[2]

In the day-to-day operations of the Account, members would draw drafts on each other, which would be entered in the " Operations Section " of their Accounts,[3] and each member agreed to accept TD's " on the same basis that it would accept *any* other currency." This provision was to give the TD's the widest possible circulation, and was imposed irrespective of whether the receiving member had a credit or debit balance in its account. "To make this possible while protecting any member from having to export on balance in any single quarter more for TD's than can reasonably be expected of any country, a limit of 8% of a member's Quota is set. If a member receives TD's beyond that sum, it may spend the excess (in the form of TD Drafts), even though it does not have a credit balance in its TD Account."

The problem of persistent debtors and creditors—an acute difficulty faced by EPU in 1951—was to be met by three provisions: one setting the limit of Credit Awards usable by the drawing members both in any given quarter and over the entire duration of the amendment; another allowing a member with a credit balance remaining in its Award Section at the end of a quarter to sell the credit for its own local currency (rather than transfer it to a credit in the Operations Section) with the Fund obtaining the currency by sale of a credit to another country's

[1] The Quarterly Credit Quota was given a maximum of 4% of the Total Quota of each member, making possible credits awarded and used by any member during a year no greater than 16% of its Total Quota. The Quarterly Debit Quota had a maximum of 8% of the Total Quota.

[2] White commented in his proposals that the member " assigned a Quarterly TD Credit Award is permitted to draw on it . . . and to use the Drafts as payment to any other member having a TD Account for settlement of *any* international transaction, whatever it may be. It is to be noted that the TD's are assigned only under specific conditions, but once assigned can be used for any purpose. . . . The member which has been assigned a Quarterly TD Debit Award has no TD's to draw upon. On the contrary, it has to accept TD's from the other members and deposit them with the Fund for credit [in the Operations Section of the Account] until the sum of those credits equals the member's debit award." (See the exception noted below, however.)

[3] The drawer of the draft would receive a debit in the Operations Section, the payee a credit; the former's Credit Award in the Awards Section would be correspondingly reduced, as would the latter's Debit Award.

account in the Operations Section for the currency to be transferred to the seller of the Award's credit; and the third was the provision noted above whereby a member having a debit balance in the Award's Section (and therefore subject to selling goods for TD Drafts to be credited to it in the Operations Section) was allowed to draw a TD Draft for payment on international account during any period if it accumulated a credit balance in the Operations Section during the previous quarter exceeding 8% of its Total TD Quota. These provisions, White asserted, would prevent the concentration of additional net purchases in a few countries (so long as the United States was not an active member): that is, if many countries attempted to concentrate their additional purchases in a few countries, they would soon find that an increasing part of the TD's they were spending in Mexico were either being used by Mexico (via the Fund clearing arrangement) or that Mexico was presenting the TD's to the Fund for sale back to the drawing member. Gradually the excess of Mexico's TD receipts (*i.e.*, excess over its quarterly open debit) would be diverted toward expenditures in countries whose open debit ceiling had not been reached.

The process of drawing TD Drafts was to continue for a period of twelve years, at which time " no further Quarterly TD Credit Awards shall be assigned to a member having a debit balance in the Operations Section of its TD Accounts. From that date on no member with a debit balance in the Operations Section of its TD Account shall be permitted to draw any further TD Drafts, and only members with net credit balances in their Operations Sections may be allocated TD Credit Awards by the Fund if earned." " At the end of 15 years the TD Accounts shall be closed. Members whose TD Accounts (Operations Section) have debit balances shall owe the Fund the sum of the debit balance; to those with credit balances the Fund shall owe the sum of the credit balance." " Any sums due the Fund shall be liquidated by payment to the Fund, in gold or dollars, at the rate of 10% of the sum each year, plus 2% per annum on the unpaid portion." " Members having sums due them shall receive payments from the Fund, in gold or in United States dollars, at the annual rate of 10% of the sum due [without interest—to provide some inducement to creditors not to allow their balances to rise greatly]." " If payments received by the Fund from members owing sums to the Fund are less [due to defaults] than the amount due to other members, the Fund shall pay 50% of the annual shortage to those members in the currency of that member out of the

Fund's assets and reserves. The remainder of the loss shall be settled as best can be on a proportionate basis by negotiation between creditors and defaulting debtors with the co-operation of the Fund."

Eligibility requirements were imposed in order to expand the regular operations of the Fund and to tie the amendment to the originally proposed lending policies and purposes of the Fund. First, permission was to be granted to countries having export surpluses of various magnitudes in the base year to remain inactive and thus not have any TD Drafts presented to them. Second, members of the Fund declared ineligible to use the Fund's resources under its regular procedures were not to be allowed to draw TD Drafts under any circumstances. Third, and most important, each member was eligible to receive, within the total and quarterly quota limits, a Quarterly TD Credit *only* (*a*) if it had used the Fund's resources previously to 60% of its *past* year's Fund quota or of its total quota in the Fund, *or* (*b*) if it had purchased one or more of the currencies not exempt from the TD Account or declared " scarce " by the Fund in a net amount of not less than 5% of its total quota in the Fund. The rationale of these provisions was explained by White as follows :

> " The proposed amendment should in no way alter the obligations of the members, nor diminish the responsibilities of the Fund. On the contrary, since the members would now have access to much greater resources, it is reasonable to expect them to conduct their affairs with the same attention to sound practices and policies as are required of them under the Charter if they are to continue to have access to these additional resources. On its part the Fund should have the same authority to safeguard the proper use of the additional resources as of the regular resources of the Fund. That does not mean that the use of the TD Accounts would be subject to the same conditions as is the use of the present resources. On the contrary, use of the TD Accounts would be designedly subject to different conditions. None the less, the use of these TD Accounts could hardly be permitted if in the opinion of the Fund improper use of the regular Fund resources were being made. . . .
>
> " It would be difficult to justify permitting a member of the IMF to draw TD's when it had a substantial part of its regular Fund quota available. The purpose of the Amendment is to supplement the Fund resources, not to attempt to compete with them.
>
> " Since the unused part of the annual quotas in the Fund could be used to purchase currencies even of those members which postponed participation in the TD arrangement,

there would be a temptation to resort to the Fund quotas only when the dollar was wanted, using the TD Account for settlement in other currencies. Such a policy would distort the operations of the Fund and still further limit its potential usefulness.

" On the other hand, to require a member fully to use up its regular Fund quota before being eligible to use its TD Account would speed up use of dollars. This, too, would be undesirable. Many members of the Fund, especially those with small gold reserves, are reluctant to use up all their full quotas. They regard their ability to buy dollars as a second line of reserves for them. They prefer to curtail needed imports rather than to use up that second line of reserves. The TD Account should enable them to increase their imports (though not from the United States) while not forcing them first to use up that reserve. The requirement that a member use up 60% of its annual quota, or 60% of its total quota would seem to be a reasonable compromise.

" Section 2 [(*b*) of the third eligibility requirement above] is included to offer some inducement to members not eligible under Section 1 [(*a*) above] to use part of their regular quotas to purchase currencies other than the dollar and one or two others. Thus, if a member would like to increase its imports from ' soft ' currency countries, yet is reluctant to use up its ' hard ' currency reserves to do so, it could by purchasing one unit of soft currency from the Fund be eligible to purchase three units under its TD Account even though it had not used up 60% of its annual or total quota. Whether the ratio of three to one is enough, or more than enough, of an inducement to promote use of soft currencies in the Fund's regular resources is uncertain. But some such inducement seems worth trying."

In commenting briefly on the proposal, two or three points appear most noteworthy. First, the amendment was an imaginative attempt to meet some very pressing problems, ones which are not yet fully solved and which have been intensified by continued inflationary pressures. The mechanical techniques may or may not be the most appropriate, and White did not consider his draft a finished document. These details would need close examination *if* such an approach were deemed desirable.

Second, an apparent obstacle to the acceptability of the suggestion lies in the eligibility requirements. One of the main objections to the Fund's policies in recent years has been that it is too stringent in allowing use of its resources. If members are required to meet these strict criteria (even if they are not imposed on TD Drafts) in order to use their TD Drafts, they might consider that the amendment is no improvement over the policies

currently objected to. At the same time, Fund members have argued that if resources were made available to them more readily, they could and would move rapidly toward the objectives of the Fund in setting up stable par values, unifying exchange rates and removing exchange restrictions.

This consideration leads to a third observation. If Fund members have merely been "over-cautious" in removing restrictions and are in fact willing to move toward the objectives of the Fund but feel themselves unable to do so because of a lack of adequate reserves, this amendment would provide just the kind of reserves required and in an amount estimated by White of about $6 billion per year. It is possible that the new resources would not be fully used, just as a man with an ample line of credit may use his own resources more freely. It would also help to rechannel trade away from the dollar area and thus reduce the drain on dollar reserves. Discussion of such an amendment would tend to bring out the basic position of members on whether pressure on balances of payments could be relieved by additional reserves or whether disequilibria are due to more fundamental causes resting in domestic policies of inflation and over-full employment, as the Fund now appears to believe.

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OFFICIAL PAPERS

THE GEOGRAPHICAL DISTRIBUTION OF ASSESSED INCOMES

THE publication, in the Ninety-fifth Report of the Board of Inland Revenue [1] of a county analysis of the results of the 1949–50 sample census of personal incomes adds a considerable volume of useful data to the hitherto scanty body of information on the geographical distribution of incomes within the United Kingdom. Country results were given in the previous report, which provided an analysis for England, Wales, Scotland and Northern Ireland, of income groups by class of tax-payer (married or single) and by type of income. As might be expected, the results for the ninety-four counties are given in less detail: classes of tax-payers are not distinguished, fewer sources of income are shown and fewer income groups are used.

[1] *Report of the Commissioners of H.M. Inland Revenue for the year ended 31st March, 1952.* (Cmd. 8726). (London: H.M.S.O., 1953. Pp. 197. 7*s*.)

The decision to publish results by counties instead of merely by the twelve Standard Regions represents a great advance. It is true that the adoption of a standard set of regional classifications by most Government Departments publishing basic statistics has been a useful feature of post-war practice. It is also true, however, that the Civil Defence Regions, which form the basis of the present Standard Regions, have a limited economic significance, but that it would not be easy to suggest an alternative set of twelve which would be appreciably more significant. What it amounts to is that the Standard Government Regions are too large to be the sole vehicle of regional economic analysis in the United Kingdom and that there is need for some basic information on patterns of income within these broad divisions. The fact that the county boundaries are not quite coterminous with Standard Region boundaries is a minor disadvantage of a county breakdown compared with the scope it offers for combining and recombining the small areas for different analytical purposes, and for penetrating more deeply into the economic structure of the Standard Regions themselves.

A comparison of the county averages derivable from the county tables of assessed incomes gives some indication of the extent to which the Standard Regions cloak wide variations in earning power. Table I shows county results grouped by Standard Regions, *i.e.*, after allocating Derbyshire county as between

TABLE I

Average Total Incomes Assessed Before Tax 1949–50

	Regional average.	Highest county average.	Lowest county average.
	£	£	£
London and South-east	464	543	382
Midland	395	409	376
East and West Ridings	393	394	386
Southern	393	422	380
North Midland	392	407	380
Eastern	381	398	358
Scotland	380	434	294
North-west	380	381	371
South-west	373	394	358
Northern	369	416	358
Wales	356	365	314
Northern Ireland	348	356	307

North-west and North Midland, and Essex and Hertfordshire counties as between Eastern and London and South-east, on the basis of population proportions. It gives estimated average assessed income from all sources per assessee for the Standard

Region so defined, the highest county average within each region and the lowest county average within the region. The regions are listed in order of their average assessed income from all sources.

It is perhaps not surprising to find that the most densely populated region and the largest in terms of area show the widest range. London, whose highest earning area is the City (treated as a separate county) and whose lowest is the county of Kent, has the widest absolute variation, and Scotland, with conditions ranging from the Clydeside to the Shetlands, has a range which, in relative terms (*i.e.*, expressed as a percentage of its regional average), is even larger. If we exclude the City as an extreme and special case, Scotland's county range is more than twice that of any other region, whether in absolute or in relative terms, and London and South-east has a relatively lower range than Northern, Wales or Northern Ireland.

The wage and salary averages are unfortunately not directly comparable as they stand because the county tables exclude the great majority of non-industrial Civil Servants and members of the Armed Forces and Merchant Navy. The income distribution for these groups, which are assessed at special offices, is shown in two separate tables (each of which covers the United Kingdom as a whole) giving the results for Public Departments and Seamen respectively. This omission from the county tables affects other categories of income also, but the amounts involved are small, except in relation to wages and salaries, where the exclusion could seriously distort regional comparisons.

In Table II an attempt has been made to allow for the omissions by distributing their wage and salary component regionally on the basis of employment data. This adjustment is crude for two reasons: first, because the Ministry of Labour regional employment analysis tends to be based on place of work rather than on place of residence, whereas the Income Census results approximate to place of residence; and secondly, because there are undoubtedly regional differences in income distribution for non-industrial Civil Servants. For both reasons the burden of inaccuracy is likely to lie more heavily on the figures for London and South-east, Southern and Eastern regions, since it is precisely in this area that daily mobility of labour across regional borders makes it necessary to keep the distinction between place of work and place of residence as clear as possible, and since it is in this area also that Civil Servants at the higher administrative levels tend to live and work. If we were able to adjust more accurately, it seems likely that the

Southern region average for wages and salaries (and possibly also the Eastern and South-western averages) would show a relative increase, for these are the areas in which the higher-earning Civil Servants probably live.[1] However, it is by no means certain that the change would be enough to shift the rank ordering shown in Table II.

TABLE II

Average Assessed Incomes by Main Class of Income 1949–50
(Regional Rankings are given in brackets)

	Wages and salaries (Schedule E) principal source.	Profits and professional earnings (Schedule D).	Income from property (Schedules A and B).
	£	£	£
1. London and South-east	370 (1)	704 (1)	63 (1)
2. Midland	353 (2)	592 (4)	45 (9)
3. East and West Riding	346 (3)	596 (3)	43 (10)
4. Southern	330 (9)	582 (6)	61 (2)
5. North Midland	344 (4)	588 (5)	48 (6)
6. Eastern	330 (8)	573 (7)	54 (4)
7. Scotland	329 (10)	675 (2)	42 (11)
8. North-west	336 (6)	531 (9)	41 (12)
9. South-west	316 (11)	531 (10)	55 (3)
10. Northern	341 (5)	571 (8)	48 (7)
11. Wales	333 (7)	462 (12)	46 (8)
12. Northern Ireland	308 (12)	478 (11)	51 (5)

Broadly speaking, it seems to be true that regions which have a relatively high average of Schedule E incomes tend to be regions with a relatively high average of Schedule D incomes also, and a significant rank correlation coefficient can be computed for these two classes of income. It is interesting to note, however, that Scotland is appreciably higher in the regional scale in respect of Schedule D incomes than in respect of Schedule E incomes, while an opposite tendency is observable for Wales, for example.

The publication of county income-distribution tables makes it possible to compare patterns of income distribution for fairly small geographical areas of the United Kingdom. When the full results of the 1951 Census of Population are available it will be interesting to relate such comparisons to the analyses of county occupational and industrial distributions. Meanwhile, however,

[1] See, for example, *Census 1951, Great Britain One Per Cent. Sample Tables*, General Register Office, H.M.S.O., London, 1952. Part II, Table V. 7, p. 180. The proportion of households with heads in higher administrative or professional occupations (as compared with intermediate administrative or professional, or clerical workers) was shown to be well above the national average in Southern region and appreciably above in Eastern region, Scotland and South-western region.

it is possible to measure the relative inequalities of county income distributions in various ways. Table III, which illustrates one of these ways, shows for a selection of counties a " coefficient of

TABLE III

Inequality of Assessed Incomes in Selected Counties of the United Kingdom 1949–50

	Average assessed incomes from all sources (£).	Coefficient of concentration (0 = complete equality; 1 = complete inequality).
1. *London and South-east*		
City	543	0·458
Middlesex	441	0·379
Kent	382	0·335
2. *Midland*		
Warwickshire	409	0·332
Herefordshire	376	0·360
3. *East and West Ridings*		
West Riding	394	0·337
East Riding	386	0·353
4. *Southern*		
Oxfordshire	422	0·379
Dorset	380	0·347
5. *North Midland*		
Leicestershire	407	0·352
Nottinghamshire	380	0·315
6. *Eastern*		
Cambridgeshire	396	0·378
Norfolk	358	0·326
7. *Scotland*		
Peebles	410	0·416
Midlothian	405	0·367
Lanarkshire	387	0·339
Invernesshire	348	0·312
Shetland	294	0·259
8. *North-west*		
Lancashire	381	0·334
Cheshire	371	0·315
9. *South-west*		
Somersetshire	394	0·371
Cornwall	358	0·329
10. *Northern*		
Westmorland	416	0·393
Northumberland	380	0·323
Durham	358	0·276
11. *Wales*		
Monmouthshire	357	0·264
Anglesey	314	0·281
Flintshire	345	0·257
12. *Northern Ireland*		
Antrim	356	0·329
Armagh	307	0·333

concentration " of incomes based on the data of Lorenz curves which plot cumulative percentages of amounts earned against cumulative percentages of numbers earning for eighteen income groups. The coefficient of concentration represents the ratio between (*a*) the area enclosed by the Lorenz curve and the diagonal

of perfect equality and (*b*) the whole area between the diagonal of perfect equality and the two sides of the square which give the limiting position of perfect inequality. Its value would therefore be 0 in a situation of perfect equality and 1 in a situation of perfect inequality.

This coefficient, calculated in respect of total assessed incomes, is shown in Table III for thirty of the ninety-four counties of the United Kingdom, together with the corresponding average income. The counties are grouped by the regions in which they fall, and the regions are again listed in order of average total assessed incomes. The selection of counties has been arbitrary and designed only to show at least two counties from each region and a variety of values for both level and concentration of incomes.

It will be seen that there are wide variations in inequality of income as measured by this coefficient, both within regions and for the country as a whole. For this selection of counties the variation in the coefficient of concentration ranges from the relatively equal distribution of Flintshire (0·257) and Shetland (0·259) to the relatively unequal distribution of the City (0·458) and Peebles (0·416). This restricted list of counties gives ample evidence of the tendency for inequality of incomes to be positively correlated with average income, but there are some interesting divergences from this tendency. The coefficient of concentration, for example, yields approximately the same value for Warwickshire and Armagh, although the former is well above average and the latter well below average in terms of the level of assessed incomes.

The Inland Revenue report gives details of income distribution over the same eighteen income groups, for wages and salaries, profits and professional earnings, and income from property. There is therefore scope for fairly detailed investigations into the nature and extent of local inequalities of income in the United Kingdom. Even this brief survey of the material now published has shown, however, that there is a considerable variety in the geographical pattern of incomes, both within the standard regions and over the country as a whole.

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Food Consumption and Expenditure [1]

The use of sample surveys to obtain information on the consumption habits of the population has in recent years become increasingly popular both in industry and government. In the case of the Ministry of Food this resulted from the war-time need to keep a check on the consumption levels of the population which was achieved by taking a random sample, at frequent intervals, of a large section of the population—the urban working-class. The major portion of the information collected in those surveys has already been published in *The Urban Working-class Household Diet, 1940–1949* (H.M.S.O., 1951), and has been noted in this Journal (September 1952, p. 710).

The value of such a continuous survey of household expenditure was increased in 1950, when it was decided to extend its scope so that it referred to the whole population rather than only a section of it. This is the first of what is intended to be a series of annual reports, and presents the results of the survey for the year 1950. It is based on a survey of some five thousand households.

A detailed account of the expenditure pattern of the population such as this contributes to our knowledge of the economic world at two levels. First, at the historical level this report describes in considerable detail how the expenditure pattern of the population changed in the four quarters of (as it has been termed) the most normal of post-war years, 1950, which saw the abolition of milk and points rationing. The return to the pre-war pattern is clearly noticed in the first half of the year and then, as Korea makes its impact, the appearance of shortages once again distorts the pattern of expenditure in the second half. The analysis of the seasonal variations in expenditure and prices is particularly illuminating, and provides a possible field for the derivation of price elasticities.

In addition to contributing at the historical level, this detailed collection of facts must inevitably contribute at a second level in that it provides greater insight into the theory of the behaviour of the household. The expense of collecting family budget records and of subsequently analysing the data is so great that few academic institutions can undertake this type of work, however great its potential contribution to our basic knowledge of the

[1] *Ministry of Food: Domestic Food Consumption and Expenditure 1950*, with a Supplement on Food Expenditure by Urban Working-class Households 1940–49: being the *Annual Report of the National Food Survey Committee* (London: H.M.S.O. Pp. 131. 4*s*. 6*d*.).

economic system. The reader will therefore be particularly grateful for two chapters of analysis, the first showing how the pattern of expenditure varies with the social class of the household, and the second showing its variation with the size of the household. The latter analysis is confined to only half the households, which in the main were those composed of only two adults and 0, 1, 2, 3 or 4 children. The tables show how for some commodities, for example potatoes, consumption per person hardly varied with household size, whereas for other commodities, such as fresh fruit, consumption per person in households with four or more children is less than half that in families with only one child. Further analysis of the data is required to clarify the interaction of social class (for which the reviewer would prefer to substitute income level or some approximation to it) and household size, and it is to be hoped that the authors will find it possible to give this in future reports.

From the point of view of factual documentation, that is the first aspect, it is desirable to publish the results of the surveys as early as possible if the reader is not to subject his imagination to an undue strain in attempting to digest a hundred pages of statistics. On the other hand, the second aspect, the time-consuming supplementary analyses which make the matter appetising, tempts delay. This is a nice problem in optimalisation: the reviewer's preferences are for a rather shorter lag than that chosen here, say, of twelve to fifteen months.

In addition to the matters already referred to, this report has a number of analyses of the nutritional content of the nation's diet; a number of appendices giving, *inter alia*, comparisons with pre-war consumption levels, and giving the basis of an index of seasonal price charges; and a supplement giving further information on the data relating to the years 1940–49. In all, this publication is a valuable addition to the economist's knowledge of consumption data and it is to be hoped that the National Food Survey Committee, and its secretaries Mr. W. L. Kendall and Miss D. F. Hollingsworth, who prepared the present report, will see fit to continue and if possible extend this work.

S. J. Prais

Department of Applied Economics,
University of Cambridge.

CURRENT TOPICS

THE Annual Meeting of the Royal Economic Society will be held at the London School of Economics at 5 p.m. on Thursday, July 2. After formal business, Lord Brand will address the Society on "A Banker's Reflections on some Economic Trends."

WE congratulate Mr. R. F. Harrod on his recent appointment to give the Sir George Watson lectures in American History, Literature and Institutions, in succession to Mr. Walter Lippmann. He has chosen "The Dollar" for his subject. Dates and places for the lectures will be announced later.

WE offer our best wishes to Mr. F. Sewell Bray on his appointment to the newly created Stamp-Martin Professorship of Accounting tenable at Incorporated Accountants Hall. Mr. Sewell Bray will be well known to many of our readers as one of those who have been endeavouring to promote greater understanding of each others' problems and terminologies between the two professions of accountancy and economics.

THE following have compounded for life membership of the Royal Economic Society:

Arya, O. P.	Chanana, K. M.	Scott, M. F.
Begum, Miss A. J.	Fand, D.	Shah, K. R.
Bhat, R. G.	Masek, J.	Tanna, S. R.
Bunn, L. J.	May, H. W.	Uchida, Prof. T.

The following have been admitted to membership of the Royal Economic Society:

Adams, Prof. W. E.	Baker, G. H.	Blem, D. G.
Adesina, J. A.	Baksh, M. K.	Boehm, E. A.
Allen, W. M.	Bamford, G.	Boys, J. R.
Ammar, F. H.	Banerjea, J.	Broussalian, V. L.
Amoako-Atta, K.	Bannerman, H. P. L.	Brown, A. R.
Andrews, Miss W. E. E.	Bardsley, J.	Callman, C. V.
	Bator, F. M.	Cartter, A. M.
Arrill, D.	Bell, E.	Catleen, Dr. H.
Azhar, B. A.	Bhattacharyya, Prof. H.	Chelvarajasingam, A.
Azulay, M.		Clark, R. W.
Baidya, J. M.	Biswas, P.	Clarke, A. R.

Clavin, P. J.
Clement, T. R.
Clower, Prof. R. W.
Cohan, M.
Condie, R. H. B.
Corner, E. A.
Cruft, A. G.
Davies, G. J.
Davies, L. N. A.
Dean, Miss I.
Deman, E. P.
Dix, B. H.
Dodge, C. F. W.
Doody, W. M.
Drummond, K. G.
Easter, K. R.
Eferberha, O. M.
Egonu, W. G.
Elliott, A. F.
Evans, W. H.
Elman, O. R.
Epale, S. J.
Everett, S. J.
Farmer, R.
Fatodu, T. O.
Fels, E. M.
Fennamore, R. W.
Fisher, S.
Fogg, G.
Gaji, R. O.
Gibbs, C. G.
Giwa-Osagie, M. A.
Glanville, A. V.
Glickfield, Prof. M. D.
Glinieki, A.
Grandy, R. F. J.
Hampson, A. E.
Harding, G. W.
Hasan, M. S.
Healey, D. T.
Hian, L. S.
Hills, E. H.
Hiner, O. S.
Hoard, R. N.
Hodgson, J.
Holles, C.
Houreld, V. L.
Howe, B. R. C.
Howlett, H.
Husain, A.
Hussain, Q. A.
Jackson, J. S.
Jain, P. C.
Jani, V. V.
Kavanagh, M. J.
Kevan, A.
Khan, Prof. S. U.
Kim, A. F.
Kurihara, Prof. K. K.
Kuttiannan, S. R.
Laleye, A. O.
Lall, S. S.
Lamb, R. T. B.
Landry, M.
Langer, F. G.
Lee, P.
Leeks, R. A.
Lewis, J. P.
Lincolne, E. R.
Livingston, W. M.
Lo, T. K.
Loughton, A. R.
Luca, Prof. M. de.
Lumsdon, J. P.
McDiarmid, P. A.
MacFadden, F. A. R.
Macer, R.
Mahhouk, A.
Mahomed, S.
Maneckji, F.
Mann, D. F. V.
Menon, V. R.
Millis, D. M.
Mills, E. S.
Mitchell, Miss J.
Morse, Prof. C.
Moss, R.
Mulville, J. W.
Mutawe-Sekabanja, S.
Mutton, H. E. H.
Nassir, Rauf
Nawdi, Mrs. R.
Needs, R. A.
Nelson, O. I.
Nicolopoulos, L. G.
Nwakoby, R. C.
O'Connell, W.
Ogilvie, G. C.
Oguagha, C. N.
Ogun, O.
Ohno, T.
Okedina-Shodeinde, A. S.
Owen, F.
Pal, I. D.
Parry, R. A.
Patel, K. K.
Patel, N. V.
Peach, K. W.
Peall, H. E.
Pearson, H. H.
Pearson, J. A. A.
Perera, K. D.
Perry, P. J. C.
Perryman, P.
Piper, Miss L. M.
Plous, H. J.
Poon, W. C.
Price, F. S. L.
Rainer, D.
Rao, B. T. P.
Rao, V. V. N.
Rennison, J.
Reynolds, A. C.
Rice, T. J. McD.
Richardson, E. M.

Rizkalla, S. K.
Rodgers, A. R.
Rogers, S. J.
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Sarna, S. R.
Savill, P.
Schollel, C. A.
Seng, L. H.
Shah, R. P.
Shankleman, E.
Sharma, P. K.
Shrivastava, V. K.
Siddall, K. W.
Singh, G. O.
Somaskanthan, C.
Song, Lee Kim.
Soyode, S. O.
Stevens, J. B.
Stinchcombe, R. G.
Stone, I.
Sudarsky, Mrs. D.
Sun, L. K.
Swain, F.
Tai, S. T.
Talaat, A.
Tangri, Prof. C. L.
Tayo, H. M.
Thaiarry, P.
Therson-Cofie, J. K.
Thorne, W. J.
Thorp, E.
Thye, L. T.
Triantis, S. G.
Tsun, M. T.
Tuckman, F. A.
Twomey, M.
Vickery, J. B.
Wald, N.
Walker, H. L.
Ward, I. D. S.
Wee, T. C.
Whiteley, A. S.
Whitfield, J. H.
Williams, M. M.
Williams, P. G.
Willson, J. P. W.
Willsmer, R. L.
Wing, S. A.
Winterton, A. L. W.
Woitrin, M.
Wong, S. K.
Woods, P. R.
Wynne, T. E.
Yong, L. T.

The following have been admitted to Library membership of the Society :

Baroda College.
Bengal Engineering College, Howrah.
Bengal National Chamber of Commerce.
Bishop's University.
Burmese National Bank, Rangoon.
Glaxo Laboratories Ltd.
Gonville & Caius College, Cambridge.
Harding College, U.S.A.
Instituto di Economia, Catania.
Instituto de Economia, Santiago.
Joint Intelligence Bureau, Ottawa.
Office Belge du Commerce Exterieur, Brussels.
Provincial Statistical Board, Ramna.
St. Patrick's College, Ottawa.
School of Advanced International Studies, Washington.
Sidney Sussex College, Cambridge.
Sophia University, Tokyo.
Union Christian College, India.
University of the East Graduate School, Manila.
Yale University Economic Seminary.

RECENT PERIODICALS AND NEW BOOKS

Economica

VOL. XX, NO. 77, FEBRUARY 1953. *Consumption Theorems in Terms of Overcompensation rather than Indifference Comparisons :* P. A. SAMUELSON. *The Decline of Pawnbroking :* A. L. MINKES. *The Origins of Cheap Money, 1931–2 :* E. NEVIN. *A Mathematical Model for Cost Analysis of Finished Products :* A. P. ZENTLER and D. RYDE. *Overseas Trade During the Napoleonic Wars, as Illustrated by the Records of W. G. & J. Strutt :* R. S. FITTON. *The Prescriptions of the Classical Economists :* S. G. CHECKLAND.

The Political Quarterly

VOL. XXIV, NO. 1, JANUARY–MARCH 1953, Special Number—The Labour Party. *The Economic Aims of the Labour Party :* H. GAITSKELL. *The Labour Party and the Trade Unions :* G. D. H. COLE. *Britain and the Outside World :* R. H. S. CROSSMAN. *Labour and Local Government :* W. A. ROBSON. *The Labour Party and Social Services :* B. WOOTTON. *The Object of Further Socialization :* J. STRACHEY. *The Ideological Situation in the Labour Movement :* D. G. MACRAE. *The Labour Party in its Social Context :* H. L. BEALES. *The Leadership, the Rank and File, and Mr. Bevan :* M. YOUNG.

The Manchester School of Economic and Social Studies

VOL. XXI, NO. 1, JANUARY 1953. *A Reconsideration of Hobson's Theory of Unemployment :* D. J. COPPOCK. *" Straddling " between Commodity Futures Markets :* J. S. MCCLAY. *Special Financial Facilities for Industry in the Depressed Areas with Particular Reference to the Experience of South Wales :* R. O. ROBERTS. *A Regional Example of the Mercantilist Theory of Economic Policy :* J. M. LOW.

Yorkshire Bulletin of Economic and Social Research

VOL. 5, NO. 1, FEBRUARY 1953. *The Lead Mines of Upper Wharfedale :* A. RAISTRICK. *Social Accounts for Ceylon :* E. L. P. JAYATILAKA. *Subjective Probability and the Economist :* J. D. SARGAN. *Wool Textile Activity and Wool Prices :* B. P. PHILPOTT. *The Influence of Earnings on the Mobility of Labour :* J. LONG and I. M. BOWYER.

The Review of Economic Studies

VOL. XX (2), NO. 52, 1952–3. *Non-Linear Estimates of the Engel Curves :* S. J. PRAIS. *Entrepreneur's Risk, Lender's Risk, and Investment :* L. WELLISZ. *Long Period Determinants of Britain's Terms of Trade, 1880–1913 :* G. M. MEIER. *On the Interpretation of Professor Leontief's System :* L. R. KLEIN. *The Economic Welfare Function and Dr. Little's Criterion :* C. KENNEDY. *Notes on the Theory of Inflation :* C. G. F. SIMKIN. *Indifference Maps for Indispensable Goods :* J. A. GALBRAITH. *A Note on Revealed Preference and the Transitivity Condition :* W. J. CORLETT and P. K. NEWMAN.

Oxford Economic Papers

VOL. 4, NO. 3, OCTOBER 1952. *The Closure of Entry in the American Automobile Industry :* H. G. VATTER. *Productivity in Canada, the United Kingdom, and the United States :* A. MADDISON. *The Early London Clothing Trades :* P. K. NEWMAN. *A New Approach to the Theory of the Firm :* A. GABOR and J. F. PEARCE. *The Climacteric of the 1890's : A Study in the Expanding Economy :* E. H. PHELPS BROWN with S. J. HANDFIELD-JONES.

VOL. 5, NO. 1, MARCH 1953. *Economics and Sincerity :* G. L. S. SHACKLE. *The Origin of the State Telephone Service in Britain :* A. HAZLEWOOD. *The Classical Economists and the Irish Problem :* R. D. C. BLACK. *Early Entrepreneurial Behaviour in Relation to Costs and Prices :* W. WOODRUFF. *Cyclical and Autonomous Inducements to Invest :* T. WILSON. *Transport Policy before and after 1953 :* G. WALKER.

Population Studies

VOL. VI, NO. 3, MARCH 1953. *Income-Tax Allowances and the Family in Great Britain :* A. M. CARTTER. *A Demographic Study of an Immigrant Community : The Indian Population of British East Africa :* C. J. MARTIN. *Emigration from Poland in the Nineteenth and Twentieth Centuries :* J. ZUBRZYCKI. *The Fertility of the Jews in Palestine :* K. R. GABRIEL. *A Note on Occupation Statistics in British Censuses :* J. BELLAMY.

The British Journal of Sociology

VOL. IV, NO. 1, MARCH 1953. *Soviet Property Law and Social Change :* J. N. HAZARD. *Women and Parliamentary Elections :* J. F. S. ROSS. *On the Social Aspects of Population Changes :* W. F. OGBURN. *Social Ranking in a Turkish Village :* P. STIRLING. *Social Grading of Occupations in New Zealand :* A. A. CONGALTON. *Selection for Secondary Education and Achievement in Four Grammar Schools :* A. H. HALSEY and L. GARDNER. *Manual Workers and the Workers' Educational Association :* W. E. STYLER.

The Sociological Review

VOL. XLII, SECTION 11, 1950. *Housing Survey of the Dock Area of Cardiff :* H. WILSON.
VOL. XLII, SECTION 12, 1950. Book Reviews.
VOL. XLIII, SECTION 9, 1951. *The Function of the Community Association :* H. W. MELLOR.
VOL. XLIII, SECTION 10, 1951. *Some Sociological Aspects of Mixed-Class Neighbourhood Planning :* G. CAMPLEMAN.

The Eugenics Review

VOL. 45, NO. 1, APRIL 1953. *Planned Parenthood :* S. RADHAKRISHNAN. *Experimental Studies of Hereditary Influences on Behaviour :* R. W. RUSSELL. *Family Environment and Intelligence :* J. NISBET. *The Bombay Conference and its Aftermath :* V. HOUGHTON. *Annual Index.*

International Affairs

VOL. XXIX, NO. 1, JANUARY 1953. *Land Reform in Egypt and its Repercussions :* D. WARRINER. *British Stewardship of the Italian Colonies : An Account Rendered :* D. C. CUMMING. *The Decline of the West in the Middle East—1 :* A. HOURANI. *Industrial Relations in South Africa :* J. D. RHEINALLT JONES. *Science in African International Relations :* E. B. WORTHINGTON. *Law and Human Rights in Bulgaria :* N. DOLAPCHIEV.

Soviet Studies

VOL. IV, NO. 3, JANUARY 1953. *The Standard of Living in Moscow, 1952 :* C. MADGE. *The Standard of Living in Moscow, 1937 :* J. MILLER. *Origin of "The Political Economy of Socialism" :* A. KAUFMAN. *A Note on Turnover Tax and Prices :* M. DOBB.

Bulletin of the Oxford University Institute of Statistics

VOL. 15, NO. 1, JANUARY 1953. *Sample Surveys for the Social Accounts of the Household Sector :* J. E. G. UTTING and D. COLE. *The 30 per cent Liquidity Ratio :* R. FROST. *A Rejoinder :* E. NEVIN.

VOL. 15, NOS. 2 and 3, FEBRUARY–MARCH 1953. *National Survey of Personal Incomes and Savings:* H. F. LYDALL. *The Summer Recession in 1952:* D. SEERS.

Accounting Research

VOL. 4, NO. 1, JANUARY 1953. *The Effects of the Local Government Act, 1948, and other Recent Legislation on the Finances of Local Authorities, 5—Conclusions. Recent Developments in the Formulation of Accounting Principles:* E. L. KOHLER. *A Simplified Form of Executorship Accounts:* D. R. B. SMITH. *Three Recent Reports on Costing in the Hospital Service. The Influences of Administrative Agencies on Accounting in the United States:* W. W. WERNTS. *Management Accounting and Conventional Accounting:* J. PARENTEAU.

The Incorporated Statistician

VOL. 3, NO. 4, DECEMBER 1952. *High Speed Computers: Their Logical Design, Programming and other Problems:* J. R. WOMERSLEY. *Accounting and Statistical Relationships:* F. SEWELL BRAY. *Statistics and Investment:* L. G. WHYTE.

The Banker

VOL. C, NO. 325, FEBRUARY 1953. *Policy for the Breathing Space. Dearer Money in America? Bank Shares as Equities. New Phase in the Gold Price Controversy?:* C. G. TETHER. *France after Pinay. The Case for Standard Bill Lodgement Forms:* W. W. SYRETT. *Forgery on a Joint Account:* E. WATKINS.

VOL. C, NO. 326, MARCH 1953. *Banking Strait-Jacket on East Germany:* S. SCHATTMANN. *Europe Quizzes the "Plan." Irish Finances in 1952:* G. A. DUNCAN. *Indonesia and Foreign Capital. Electronics and the Banks:* M. S. GOLDRING.

VOL. C, NO. 327, APRIL 1953. *Malenkov's Economic Inheritance. Report on Nationalisation: I—the Financial Results:* O. R. HOBSON. *Electronics and the Banks: II—Costs of Electronic Accounting:* M. S. GOLDRING. *A Code for Documentary Credit Work:* M. MEGRAH. *Industrial Development in Wales:* E. V. MORGAN.

The Bankers' Magazine

NO. 1307, FEBRUARY 1953. *Very Subdued Optimism. Banking Profits in 1952. International Survey:* H. E. EVITT.

NO. 1308, MARCH 1953. *The Fiscal Impasse. Banking and Economic Conditions in Ireland in 1952. Warning to Widowers. Insurance and the Flood Disaster.*

NO. 1309, APRIL 1953. *The Banker as Executor and Trustee:* H. D. G. TREW. *The Banker and the Church:* P. R. SPIRO. *Broken Europe.*

Barclays Bank Review

VOL. XXVIII, NO. 1, FEBRUARY 1953. *Rates—Fixed or Flexible. British Merchant Shipping. Prosperity in Kuwait. The Chairmen's Statements. Aluminium.*

District Bank Review

NO. 105, MARCH 1953. *The United Kingdom as a Source of Capital:* F. W. PAISH. *Prospects for Radio and Television in 1953:* J. H. DUNNING. *The Long View.*

Lloyds Bank Review

NO. 28, APRIL 1953. *Problems of European Integration:* R. ARON. *The Economist and Public Policy:* J. JEWKES. *What Kind of Convertibility:* A. C. L. DAY.

Midland Bank Review

FEBRUARY 1953. *Long-Term Trends in the Finance of Local Government. Britain's Milk. The Scope of Government Trading.*

National Provincial Bank Review

No. 21, FEBRUARY 1953. *Taxation and Savings, an Industrial View:* SIR R. SINCLAIR. *A Property Survey:* H. G. HODDER.

The Three Banks Review

No. 17, MARCH 1953. *The Future of British Imports:* E. A. G. ROBINSON. *The American Civil Service:* R. N. SPANN. *George Dempster of Dunnichen.*

Westminster Bank Review

FEBRUARY 1953. *How the Budget is Built:* D. C. HAGUE. *The Crown and the Changing Commonwealth:* N. MANSERGH. *The Trade in Non-Ferrous Metals. The British Agricultural Engineering Industry:* R. A. DUDMAN.

Journal of the Institute of Transport

VOL. 25, NO. 2, JANUARY 1953. *Statistical Methods and Operational Research in Transport:* F. A. A. MENZLER. *The Operation and Economics of Road Passenger Transport:* J. AMOS. *Transport Users' Consultative Committees:* M. A. CAMERON.

VOL. 25, NO. 3, MARCH 1953. *Fundamental Techniques in Transport and their Recent Evolution:* L. ARMAND. *Bills of Lading and Documentary Credits:* C. H. MINETT. *Some Legal Aspects of Passenger Transport:* G. S. M. BIRCH. *Air Transport in Australia:* C. A. BUTLER. *The Scottish Section, 1928–53:* J. S. FERRIER.

Planning

VOL. XIX, NO. 351, FEBRUARY 1953. *Planned Development in the Less Developed Countries.*

VOL. XIX, NO. 352, APRIL 1953. *International Capital for Economic Development.*

Town and Country Planning

VOL. XXI, NO. 106, FEBRUARY 1953. *A New Town Comes to Life:* L. E. WHITE. *The Town Development Act:* E. H. DOUBLEDAY. *The New Act and Manchester:* L. B. KEEBLE. *Glasgow Plan: Some Criticisms. Development Values:* G. PEPLER and C. THORNTON-KEMSLEY. *Housing in Communist Countries II:* D. DONNELLY. *Landscaping at Crawley:* R. MORLING. *Post-war Planning in Holland:* P. C. N. MARSTON.

VOL. XXI, NO. 107, MARCH 1953. *North Yorks Moors National Parks:* G. CHETWYND. *Country Towns in Scotland:* R. GRIEVE. *A Third Garden City:* H. S. JEVONS. *The Changing Village:* G. CLARK. *Modern Inn Signs:* W. J. PHILPOTT. *A Note on Poplars:* J. D. U. WARD. *What's in a Name?:* H. MACE.

VOL. XXI, NO. 108, APRIL 1953. *New Towns for Old:* R. STAMP. *Country Towns Conference:* T. B. OXENBURY. *The Le Corbusier Law-suit:* G. PILLIET. *Development Values: What Now?:* C. S. ORWIN. *The Wash:* P. LAWS. *A Forest Anniversary:* J. D. U. WARD. *Lych Gates:* J. O. I. SPOCZYNSKA.

Cartel

VOL. 3, NO. 2, OCTOBER 1952. *The Abuse of Economic Power:* W. SERWY. *Consumer Protection or Butter Politics?:* F. MEISSNER. *Big Buyer* VS. *Big Seller:* R. EVELY. *Troubled Oil. The Swiss Watch-Making Cartels. Fair Trade is Back.*

VOL. 3, NO. 3, JANUARY 1953. *Decartelisation: the final rounds:* M. TAMPLIN. *Running the Newsreels:* M. FIELDING. *Cartels and a Free Economy:* J. F. VAN NETTEN. *Countering Monopoly Power. Monopoly Laws in South Africa. The World of Nestle. Insulin's Clear Bill.*

Progress (Lever Bros.)

VOL. 43, NO. 237, WINTER 1952–53. *The International Company and Point Four:* SIR H. CLAY. *Reconstruction in Germany:* J. MIDGLEY. *On Meeting African Chiefs:* C. WILLS. *The Impact of Taxation on Industry:* G. SCHWARTZ. *Independence of the Seasons:* M. COSTA. *The Revolutionary Role of Private Enterprise in Africa:* J. AMERY. *Patchouli, Sassafras and Suchlike:* B. HOLLOWOOD. *Vitamins in Margarine:* H. J. CHANNON. *The Science of Man:* DARYLL FORDE.

Hard Fibres

NO. 7, DECEMBER 1952. *Fibre and Cordage Trends. World Situation. Market Reports.*

NO. 8, MARCH 1953. *World Fibre Position—Forecast for 1953. The Longer-Term Prospect. Trends in Manufacturing Countries: 1. United Kingdom.*

Journal of the Statistical and Social Inquiry Society of Ireland

VOL. XVIII, 1951–52. *Symposium on National Income and Social Accounts. Factors Influencing Air Transport Rates and Fares:* G. FITZGERALD. *Company Accounting:* F. SEWELL BRAY. *The Electricity Supply Board:* R. F. BROWNE.

The Canadian Journal of Economics and Political Science

VOL. 18, NO. 4, NOVEMBER 1952. *Adolescent Bureaucracy: Some Features of the Canadian Civil Service before Confederation:* J. E. HODGETTS. *The Formative Years of the House of Commons, 1867–91:* N. WARD. *On the Problem of Social Welfare Functions:* J. C. WELDON. *An Analysis of Multiple-Employer Collective Bargaining Based on Three Case Studies:* S. EASTMAN. *Organized Philanthropy in an Urban Community:* A. D. ROSS. *Marxist Theory and Scientific Methods:* H. B. MAYO. *Social Credit Measures in Alberta:* H. WHALEN.

VOL. 19, NO. 1, FEBRUARY 1953. *Economic Development and the Transfer Mechanism:* G. M. MEIER. *Native Indians and the Fishing Industry of British Columbia:* P. GLADSTONE. *Foreign Exchange Control in Canada, 1939–51:* A. O. GIBBONS. *Labour and Politics in New Zealand:* N. G. PAULING. *Private Enterprise and International Capital:* P. HARTLAND.

The Economic Record

VOL. XXVIII, NO. 55, NOVEMBER 1952. *L. F. Giblin: An Appreciation. The Needs of the Worker:* R. J. CAMERON. *The Weight of Taxation in Five Countries, 1938–1950:* R. C. GATES. *"The Chariot Wheels of the Central Government":* J. A. LA NAUZE. *Premiums on Internationally Traded Shares:* E. P. NEALE. *The Master Bakers' Association of New South Wales, 1926–1939:* N. T. DRANE.

The South African Journal of Economics

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NO. 1, 1953. *Zur konjunkturellen Situation :* I. RIECKENBERG and H. MARTELL. *Quantitative Betrachtungen zur Wistschaftslage in Westdeutschland :* F. GRÜNIG. *Das Anlagevermögen an Wohnungsbauten im Bundesgebiet und in West-Berlin :* K. D. ARNDT. *Der "Council of Economic Advisers" des amerikanischen Präsidenten und das Schicksal des amerikanischen Employment Act von 1946 :* A. WISSLER. *Uran, ein neuer Rohstoff in der Weltwirtschaft :* F. FRIEDENSBURG.

Europa Archiv

VOL. 8, NO. 1, JANUARY 1953. *Die politischen und wirtschaftlichen Probleme der europäischen Einigung um die Jahreswende 1952/53 :* W. CORNIDES, E. FELDMANN and J. WILLMANN. *Der Europäische Wirtschaftsrat (OEEC) und die Europäische Gemeinschaft für Kohle und Stahl :* K. SCHILLING.

VOL. 8, NO. 2, JANUARY 1953. *Probleme der Französischen Union. II. Teil : Indochina :* R.-J. GUITON. *Das Schicksal des Einzelhandels in der sowjetischen Besatzungszon Deutschlands :* F. PÖHLER.

VOL. 8, NO. 3, FEBRUARY 1953. *Die Entwicklung der Russländischen Emigration nach dem Zweiten Weltkrieg :* H. VON RIMSCHA. *Die vierte Jahresbericht des Europäischen Wirtschaftsrates vom 13. Dezember 1952.*

VOL. 8, NO. 4, FEBRUARY 1953. *Die amerikanische Aussenpolitik nach dem Regierungswechsel :* W. CORNIDES. *Die Entschliessungen des Verfassungsausschusses der ad hoc Versammlung vom 20. Dezember 1952.*

VOL. 8, NO. 5, MARCH 1953. *Die Amerikanische Aussenpolitik nach dem Regierungswechsel :* H. VOLLE. *Der Weg zur Konvertibilität der europäischen Währungen :* K. ALBRECHT and P. KREBS.

VOL. 8, NO. 6, MARCH 1953. *Konsolidierung und Erweiterung der NATO :* H. VOLLE. *Probleme der wirtschaftlichen Integration in Ost- und Westeuropa. Ein Bericht der Forschungs- und Planungsabteilung der ECE.*

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VOL. 69, NO. 2, 1952. *Über die Grundsätze der Geld- und Kreditpolitik in den Vereinigten Staaten :* O. DONNER. *A Note on the Existence of a Static Equilibrium in the Leontief System :* T. M. WHITIN. *Bemerkungen zum Verkehrgesetz von Lardner :* M. J. BECKMANN. *Das Beste aus beiden Welten : Planung und Preismechanismus :* H. GIERSCH.

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VOL. XXV, NO. 12, DECEMBER 1952. *Rückblick auf das Jahr 1952. Kraftwerkbau und Stromverbrauch.*

VOL. XXVI, NO. 1, JANUARY 1953. *Die wirtschaftliche Lage in Österreich. Produktion und Absatz von Vieh im Jahre 1952.*

VOL. XXVI, NO. 2, FEBRUARY 1953. *Die Entwicklung der österreichischen Wirtschaft auf einzelnen Gebieten im Jahre 1952.*

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VOL. 88, NO. 6, DECEMBER 1952. *Betrachtungen zur neuen Geld- und Kreditpolitik :* V. F. WAGNER. *Theory and Practice ; Knut Wicksell and Sweden's Monetary Policy 1946–48 :* P. JACOBSSON. *Das Problem*

des regionalen Multilateralismus : K. BRUNNER. *Die Nachkriegsprobleme Europas im Urteil der Europäischen Wirtschaftskommission :* R. ERBE.

VOL. 89, NO. 1, FEBRUARY 1953. *Zur Geschichte, Theorie und Anwendung der Kreislaufbetrachtung :* H. PETER. *Erkenntniswert und Grenzproduktivitätstheorie :* E. PREISER. *Zur Lebenshaltung der Familie in der Schweiz :* E. STEIGER.

Aussenwirtschaft

VOL. 7, NO. 4, DECEMBER 1952. *Betrachtungen zur Aussenwirtschaftspolitik :* H. BACHMAN, A. BOSSHARDT and F. LÜTOLF. *Zahlungspolitische Voraussetzungen des Schumanplanes :* H. BACHMAN and E. HEUSS. *Struktur und Entwicklung der aussenwirtschaftlichen Leistungsbilanz der Schweiz :* F. KNESCHAUREK. *Die Zollpolitische Lage der Schweiz in der Nachkriegszeit :* E. HEUSS.

De Economist

NO. 2, FEBRUARY 1953. *De bevolking van West-Europa in de eerste helft van de twintigste eeuw : een demografische studie :* A. M. DE JONG. *Normatieve budgetten :* E. VAN CLEEFF. *Indonesische kroniek :* G. A. KESSLER.

NO. 3, MARCH 1953. *Verlaging van invoerrechten in der jaren na 1945 :* N. FRANKEN. *Ruslands weg naar het communisme :* J. HUIJTS. *Opmerkingen en aantekeningen :* W. L. VALK.

Review of the Economic Conditions in Italy (Banco di Roma)

VOL. VII, NO. 1, JANUARY 1953. *Italy and the "Green Pool" :* H. E. AMINTORE FANFANI. *Situation of the Mechanical Industry in Italy :* E. BONOMI.

VOL. VII, NO. 2, MARCH 1953. *The "Matrix" Reveals the Structure of Italian Economy :* F. DI FENIZIO. *Situation of the Mechanical Industry in Italy, II :* E. BONOMI.

Banco Nazionale del Lavoro Quarterly Review

VOL. V, NO. 23, OCTOBER-DECEMBER 1952. *The Relation between Internal Inflation and the Balance of Payments :* J. TINBERGEN. *Monetary Policy in Sweden :* L. E. THUNHOLM. *Myths and Realities of the European Green Pool :* G. U. PAPI. *The Sliding Scale System in Italy :* R. SPESSO. *Compulsory Unemployment Insurance in Italy :* G. PAPA.

Rivista Italiana di Economia Demografia e Statistica

VOL. VI, NO. 1–2, 1952. *Sulle probabilità indipendenti :* F. P. CANTELLI. *Sul premio delle assicurazioni a primo fuoco :* R. D'ADDARIO. *Sul significato degli indici di relazione :* M. VERGOTTINI. *Indici di mobilità ed analisi dei gruppi :* P. BATTARA. *Contributo statistico allo studio della variabilità dei caratteri negli uomini e nelle donne :* G. TAGLIACARNE. *Sul calcolo del "fattoriale di n" :* R. MOGNO. *Talune applicazioni statistiche del teorema del l'invarianza del birapporto :* G. CHIASSINO.

Giornale degli Economisti e Annali di Economia

VOL. XI, NO. 9–10, SEPTEMBER 1952. *Le theorie delle fluttuazioni economiche :* M. FANNO. *"Trend" e punti di inversione in una fluttuazione economica :* G. U. PAPI. *La construzione scientifica della dinamica economica :* G. DEL VECCHIO. *Interventi sulla relazione Fanno. L'Epistemologia Keynesiana :* G. DEMARIA. *Le configurazioni ripetibili virtuali nell'analisi delle fluttuazioni economiche :* G. LA VOLPE. *L'Econometria e la teoria delle fluttuazioni economiche :* E. FOSSATI.

VOL. XI, NO. 11–12, NOVEMBER–DECEMBER 1952. *Di una proprietà dell' imposta progresiva alla luce della "mathematica fiscale" e della economia finanziaria :* E. D'ALBERGO. *Sulla preferabilità :* B. DE

FINETTI. *Considerazioni metodologiche sul calcolo della pressione finanziaria:* B. GRIZIOTTI. *Pianificazione economica in regime democratico:* G. U. PAPI. *La teoria dell'illusione finanziaria nel suo cinquantesimo anniversario:* F. VINCI.

Il Politico

VOL. XVII, NO. 3, DECEMBER 1952. *L'economia della "piena occupazione":* W. ROEPKE. *La "Patologia economica" di Corrado Gini:* A. DE VITA. *La guerra civile spagnola nei documenti tedeschi:* E. ANCHIERI.

Italian Affairs

VOL. II, NO. 1, FEBRUARY 1953. *Italy, Africa and European Unity. Electoral Systems in Italy. Italian Women in the Life of the Nation. Methane Prospects.*

Nationalekonomisk Tidsskrift

VOL. 90, NO. 3–4, 1952. *Geiger and his Last Book:* F. ZEUTHEN. An obituary and review. *Some Considerations Concerning Industrial Productivity:* H. STEVENIUS-NIELSEN. The author of this paper is an industrialist. He points out the dangers of discussing general changes in productivity as shown by dividing a production index with an employment index, and gives some examples for particular industries to show how change in effort spent on packing products makes gross productivity figures misleading. Danish productivity is not as low as Danish–American productivity reports might suggest, since these naturally concentrated their attention on inferior Danish plants. The author then stresses that wages are not the only cost and discusses past and expected future changes in the labour intensity of Danish industry. He concludes by stressing the need for a favourable economic climate if productivity is to be raised. *The Position of Danish Agriculture in International Competition:* AKSEL MILTHERS. *Dynamic Considerations in the Precautionary and Speculative Motives for Liquidity:* H. SCHLEBAUM LARSEN. A shift along a speculative liquidity-preference curve will gradually cause a shift in the curve as the change in the actual rate of interest leads to a change in the expected rate of interest. This is illustrated diagramatically.

VOL. 90, NO. 5–6, 1952. *The Budget and its Problems:* THORKIL KRISTENSEN. An address to the Danish Economics Association by the finance minister. *A Comparison between current cost theory and the cost theory of Jantzen:* HANS BREMS. Ivar Jantzen is an engineer who has published several papers on cost theory (which have appeared in book form in English). He considers production as made up of a number of stages; in each stage there is one durable lumpy factor, so that marginal cost shoots up each time another unit has to be added. The effect of different degrees of lumpiness in different stages is discussed, and Dr. Brems concludes by claiming that Jantzen's analysis is superior in three respects: (1) the division into stages, (2) emphasis on the limited possibilities of substitution between the durable and other factors, and (3) constant average variable costs as a first approximation. *New Orientation in Monetary Policy:* ERIK HOFFMEYER. A long article. Part I surveys monetary policy since the war in the U.S.A., England, Sweden and Denmark. Part II discusses the aims, techniques and effectiveness of monetary policy. *The regulation of socially undesirable restrictions on competition:* M. G. SØRENSEN. Review article about an important official Swedish report on restrictive practices.

L'Egypte Contemporaine

VOL. XLIII, NO. 270, OCTOBER 1952. *Features of Expansion and Contraction in the Egyptian Economy:* Y. MOLLA. *The Trade Pattern of Developing Countries:* Z. HASHEM. *Le Problème de l'endettement rural en Egypte:* J. G. ECONOMIDES. *Aperçu sur l'éxecution de la Réforme Agraire en Italie:* G. VAUCHER.

Revista de Economia

VOL. V, NO. 4, DECEMBER 1952. *Sobre a observação estatística das finanças públicas :* A. C. LEAL and J. M. S. FALCAO. *Algumas características da agricultura portuguesa encardas na sua conexão com o mercado :* A. CASTRO. *Alguns aspectos da indústria portuguesa no enquadramento económico nacional :* H. C. PEREIRA. *A actividade resseguradora do ponto de vista financiero :* A. DA C. MIRANDA. *O crédito de fomento em Angola :* A. S. GONÇALVES.

El Trimestre Económico

VOL. XIX, NO. 4, OCTOBER–DECEMBER 1952. *Restauración, revisión y tercer camino :* J. R. HEROLES. *La mecánica del desarollo económico :* H. W. SINGER. *Estructura banciaria y política monetaria de El Salvador :* J. MÁRQUEZ and E. MONTEALEGRE.

Boletin de Estudios Economicos

VOL. VIII, NO. 28, JANUARY 1953. *Reforma de la contribución general sobre la renta :* J. A. SÁNCHEZ-ASIAIN. *El empresario y el monopolio :* M. GARAU. *Orígenes del capitalismo en Vizcaya :* J. M. PÉREZ-AGOTE Y POVEDA. *Ordenación du conceptos en la theoria cuantitativa. Neuva formulación de la velocidad del dinero :* J. M. RODRÍGUEZ-LAUCIRICA. *Las sociedades de capitalización :* F. DEL BARRIO PETRALANDA.

Revista de Ciencias Económicas

VOL. XL, SERIES III, NO. 36, JULY–AUGUST 1952. *La contabilidad de las empresas ante la fluctuación de los valores monetarios :* S. MOUSSATCHE. *A propósito de la dialéctica :* J. R. MUSSO.

Osaka Economic Papers

VOL. I, NO. 1, MAY 1952. *An Introduction to Sociological Economics : Implications of Keynesian Theory :* Y. TAKATA. *Structure of Pyramid Holding Companies :* K. MESAKI. *Two Types of Cash Balances :* T. ICHITANI. *Unemployment Insurance in Osaka City :* T. HIRATA. *Some Aspects of Exchange Equilibrium :* S. SOBAJIMA. *A Theory of Composite Commodity :* T. YOKOHAMA. *A Study on the Distinction between Capital and Income :* K. KIUCHI. *On the Laws of Change of the Price-System in an Economy which contains Complementary Commodities :* M. MORISHIMA.

Statisztikai Szemle (*Hungarian text*)

DECEMBER 1952. *The Law on State Statistics : Text, Exposé and Parliamentary Debate. Current Problems of Mechanisation in Industry and Building :* I. RYZHOV. *Some Present Day Tasks in the Analysis of Variations in Costs of Production :* O. GADÓ and L. FESZLER. *The Tasks of Financial Statistics :* J. SZÁSZ. *The Organization of Statistics on Public Instruction :* E. SZABADY.

JANUARY 1953. *Defects in Reports Prepared by Ministries :* J. GARAM. *Improve Building Materials Accounting :* A. HAJDUNÉ KÖVESDI. *The British Census of 1951 :* R. DARWIN. *Better Accounting with More Accurate Statistics of Costs of Production :* L. TÜÜ. *The Statistical Treatment of New Fixed Capital :* M. DYACHKOV.

Voprosy Ekonomiki (*Russian text*)

NO. 10, 1952. *Speech to the XIX Party Congress :* J. V. STALIN. *A Great Contribution to the Treasury of Marxism–Leninism. The Fundamental Economic Law of Contemporary Capitalism :* M. RUBINSTEIN. *The Fundamental Economic Law of Socialism :* G. KOZLOV. *The Majestic Plan for the Development of the Economy of the U.S.S.R. :* I. SHIRINSKY. *The Peculiarities of Investment and the Crisis in Contemporary Capitalism :* I. TRAKHTENBERG. *Three Years of the Chinese*

Peoples' Republic : E. KOVALEV. *Statistics as a Science :* V. NEMCHINOV.

No. 11, 1952. *35 Years since the October Revolution. On the Character of Economic Laws under Socialism :* A. RUMYANTSEV. *The Basic Means of Technical Progress in the Period of Transition from Socialism to Communism :* A. ARAKELYAN. *The Economic Importance of the "Lenin" Volga–Don Canal :* M. MARAKHANOV. *Reactionary American Economists-Preachers of Militarism and Aggression :* Y. POKATAEV. *The Struggle of French Workers against the Imperialist Hunger Policy :* V. LYUBIMOVA. *The Stalinist Theory of the Collectivisation of Agriculture :* M. KRAEV. *The Subject Matter and Essence of Statistics :* P. RABINOVICH.

No. 12, 1952. *Comrade Stalin's Replies to the Questions of James Reston, Diplomatic Correspondent of the New York Times, 21 December 1952. J. V. Stalin on Commodity Production and the Law of Value under Socialism :* I. VYAZMIN. *The Increase of Workers' Qualifications in U.S.S.R. Industry :* O. GUBAREVA. *The Aggravation of Contradictions and the Inevitability of War between the Capitalist States :* I. LEMIN. *The Anti-Popular Essence of the so-called "American Way of Life" :* M. BASKIN. *Questions of the Industrial Development in Russia :* S. STRUMILIN. *The Aggravation of the Uneven Development of Capitalism in the Period of the General Crisis of the World Capitalist System :* M. KAMYSHIN.

No. 1, 1953. *Wholly Overcome the Errors and Radically Improve the Work of Soviet Economists. J. V. Stalin on the Fundamental Preconditions for the Preparation for the Transition to Communism :* A. LAPIN. *On the Concept of Product-Exchange :* N. SMOLIN. *The Upsurge of U.S.S.R. Industry in the Five-Year Plan :* P. KHROMOV. *The National Liberation Movement among the Peoples of the Near and Middle East :* G. AKOPYAN. *The Export of Capital—a Means of Securing Maximum Profits for United States Monopolies :* V. SOLODOVNIKOV. *Lenin's Plan for Co-operatives :* M. ILIN. *The Economic Views of N. V. Shelgunov :* F. MOROSOV.

Planovoe Khozyaistvo (*Russian text*)

No. 5, 1952. *Speech to the XIX Party Conference :* J. V. STALIN. *The Great Stalinist Teaching on the Laws of Development of Socialist Economies. The Historic Decisions of the XIX Conference of the Communist Party of the Soviet Union. The Teaching of Comrade Stalin on the Basic Conditions for Preparing the Transition from Socialism to Communism :* G. PETROV. *Socialist Industry in the Fifth Five-Year Plan :* G. SOROKIN. *New Possibilities for the Development of Socialist Agriculture in the Fifth Five-Year Plan :* S. DEMIDOV. *Aggravation of the Struggle for Markets in the Imperialist Camp :* L. BOLSHAKOV and V. MORDVINOV.

Vestnik Statistiki (*Russian text*)

No. 4, 1952. *On the Eve of the XIX Congress of the C.P.S.U. (B). For an Improvement in the Level of Work in Local and Town Inspectorates of the Central Statistical Administration of the U.S.S.R. V. I. Lenin on the Aims, Forms and Methods of Statistical Observations :* T. KOZLOV. *Current Accounting Problems of Labour Mechanisation in Industry and Construction :* I. RYZHOV. *Questions of Subject Matter and Method in Statistics :* I. SHULGIN. *The Post-war Economic Expansion of American Imperialism :* M. DOBROV. *Planning the Work of a Local or Town Inspector of the Central Statistical Administration :* B. KOLPAKOV. *Experience in Checking the Census of Material Resources by the Statistical Administration of Gorky Oblast :* V. KAYUROV. *Experience in Organising the Census of Material Resources :* G. LATYSHEV. *Working Experience in Improving Accounting Methods concerning Collective Farm Livestock :* E. VOLKHOVITINOVA. *The Subject Matter and Methodology of Statistics :* I. SUSLOV.

No. 5, 1952. *Speech at the XIX Party Congress :* J. V. STALIN. *The Contribution of a Genius to the Treasury of Marxism. The XIX Congress*

of the Party of Lenin–Stalin. The XIX Congress of the Communist Party and the Tasks of Soviet Statistics : V. STAROVSKY. *The National Economic Significance of the "Lenin" Volga–Don Ship Canal :* F. KOSHELEV. *V. I. Lenin on the Objects and Unity of Statistical Observations :* L. KASINETS. *On the Classification of the Branches of Material Production :* P. MOSKVIN. *The Economy of the Chinese People's Republic in a Great Upsurge :* G. ASTAFEV.

No. 6, 1952. *The Fifth Five-Year Plan and the Next Tasks for Industrial Statistics :* A. EZHOV. *Capital Construction in the Fifth Five-Year Plan and the Tasks for Statistics Thereof :* K. VINOGRADOV. *Problems of Indices of Manpower Utilisation :* M. ILEVSKY. *Problems of Soviet Statistics as a Science :* I. KAGANOVICH. *Concerning the Erroneous Articles of Comrades Chermensky, Mikhailov and Sobol :* I. PISAREV. *Bourgeois Apologetics in British Mortality Statistics :* A. BOYARSKI. *The Mechanisation of Accounting in the State Bank of the U.S.S.R. :* I. KOLYCHEV. *Working Experience in the Preparation of Annual and Current Reporting in Capital Construction :* A. ZUBAREV. *A New Pro Forma for the Monthly Livestock Reports of Collective Farms :* A. BRYANSKY. *Checking the Economic Reports of Rural District Councils :* G. ZHUYKOV.

Probleme Economice (Rumanian text)

VOL. V, NO. 12, DECEMBER 1952. *The Replies of J. V. Stalin to the Diplomatic Correspondent of the* New York Times. *Speech of Gh. Gheorghiu-Dej at a Meeting of Constituents in the Grivița Roșie Electoral District, Bucharest. The Fifth Anniversary of the Rumanian People's Republic. J. V. Stalin on Commodity Production and the Law of Value under Socialism :* G. KOZLOV. *J. V. Stalin on the Objective Nature and the Characteristic of Economic Laws :* C. SABIN. *The Development of Soviet Agriculture under the Fifth Five-Year Plan :* A. PRIADCENCU. *Norm fixing for Material Input in Production :* R. CIOROIU. *The Peaceful Economic Construction of the German Democratic Republic and the Militarization of the Economy of Western Germany :* L. MEDIANU. *The United States Economy—a War Economy :* D. MARINESCU. *The Economic Significance of Michurinism for Our Agriculture :* M. MANOLIU.

Finansy i Kredit (Bulgarian text)

No. 10, DECEMBER 1952. *Capital Construction in the U.S.S.R. and in Bulgaria :* D. SAPUNDZHIEV. *Savings—an Important Factor in the Finance of our Socialist Construction :* A. STOYANOV. *State Taxes in the People's Republic of Bulgaria :* KH. NIKOLOV.

Ekonomist (Serbian text)

No. 4, 1952. *The Sixth Congress of the Yugoslav Communist Union and the Tasks of Economists :* R. DAVIDOVIĆ. *Experience Drawn from the Application of the New Economic System :* B. JOVANOVIĆ. *Concerning a Discussion on the Law of Value :* M. GAVRIĆ. *New Forces in the Development of the Social Structure of the Leadership of Co-operative Farms in Serbia :* M. VUČKOVIĆ. *The Extension of the Foreign Exchange Monopoly of the Soviet Union :* V. MILENKOVIĆ. *Boundary Adjustment of the Land of Working Co-operatives in the Voivodina :* B. PROTIĆ. *German and Hungarian Reparations and Restitution Supplies in our Industry :* V. PEJOVSKI. *The Natural Resources of the Kosovo and Metohija Regions :* S. BLAGOJEVIĆ. *The International Wheat Agreement :* DJ. LADJEVIĆ.

NEW BOOKS

British

ALEXANDROWICZ (C. H.). International Economic Organisations. London : Stevens, under the auspices of the London Institute of World Affairs, 1952. 8½″. Pp. vii + 263. 30*s*.

[The organisations here described include not merely the large number of governmental and other bodies functioning at the present time but also their predecessors, and the author is at pains to trace the process by which contemporary organisations have evolved into their present shape from earlier forms. Although the author is only secondarily concerned to assess the actual achievements of the various organisations, he provides much useful information on this as well as on their constitutions and rules of operation. Mr. Alexandrowicz is Professor of International and Constitutional Law in the University of Madras.]

All About Beer. Portrait of a traditional industry. London : The Statist, 1952. 9½″. Pp. 104. 5*s*.

[This is the first of a series of booklets on British industries to be published by the *Statist*. It begins with a survey of the structure of the industry, and then touches briefly on all aspects of the brewing, licensed and allied trades. The illustrations are helpful; the tone is laudatory and uncritical.]

BELLAMY (J.) and WEBB (M.). The Foreign Trade of Humberside. A study in post-war trade trends. Hull : University College of Hull, 1952. 13″. Pp. 61 and Statistical Appendices.

[This is a study based on the Annual Statements of Trade and the monthly Trade and Navigation Accounts. Changes in the structure and volume of trade in total and by commodities and commodity groups for the Humber ports between 1938 and 1946–49 are compared with the corresponding trends for the volume of United Kingdom foreign trade as a whole. The proportion of United Kingdom trade passing through Humberside was less in 1946–49 than it had been before the war, and in 1949 the volume of activity of the Humber ports taken as a group had not yet regained its 1938 level. In this respect, as in others, the experience of Goole has been somewhat different from that of Hull and Grimsby, since exports are much more important relative to imports in Goole than in the other two ports. Consequently the volume of Goole's trade, unlike that of the region as a whole, was greater in 1949 than in 1938.]

BENNETT (L. G.). The Horticultural Industry of Middlesex. Reading : University of Reading Department of Agricultural Economics, 1952. 9½″. Pp. 70. 10*s*.

[This scholarly monograph is divided into two parts. The first traces the history of horticulture in Middlesex since the earliest times, with special reference to the last 150 or so years. The second contains a detailed survey of the present-day structure of the industry. The great problem facing the industry now, as it has been in the past, is, of course, the demand on land made by the growth of Greater London. The author concludes with some suggestions on how the industry can best adapt itself in face of the seemingly inevitable decline in the acreage devoted to horticulture in Middlesex in the future.]

BRITISH ELECTRICAL DEVELOPMENT ASSOCIATION. Higher Industrial Production with Electricity. London : British Electrical Development Association, 1953. 9″. Pp. v + 146. 9*s*.

[This is the introductory volume of the series on "Electricity and Productivity," published by the Electrical Development Association, of which eight titles have so far been announced.]

CANNAN (E.). A History of the Theories of Production and Distribution from 1776 to 1848. Third Edition reprinted. London : Staples, 1953. 8½″. Pp. v + 336. 21*s*.

[A reprint is now made available of this celebrated work, which originally appeared in 1898.]

CAREY JONES (N. S.). The Pattern of a Dependent Economy. A study of the national income of British Honduras. Cambridge: Cambridge University Press, 1953. 8½″. Pp. vii + 162. 21*s*.

[To be reviewed.]

CHAPMAN (AGATHA L.) assisted by KNIGHT (ROSE). Wages and Salaries in the United Kingdom 1920–1938. Studies in the national income and expenditure of the United Kingdom, No. 5. Cambridge: Cambridge University Press, 1953. 12½″. Pp. v + 254. 55*s*.

[To be reviewed.]

COAL UTILISATION COUNCIL. A Survey into the Domestic Use of Solid Fuel and Solid Fuel Appliances in Great Britain. London: Coal Utilisation Council, 1953. 9½″. Pp. 63. 6*s*.

[This forms a useful supplement to the report of the Ridley Committee. It is based on a sample survey conducted by the Research Department of Mather and Crowther, Ltd., relating to methods of space heating, water heating and cooking actually in use in British households. Among the interesting results emerging is the large proportion of houses in which the heating appliance in the living-room also serves as a cooker—an important indication of the type of appliance required for the reconditioning of older houses. The inquiry also included questions put to householders on preferences between different methods of heating and on whether at current prices they would buy more solid fuel if restrictions were removed. Another interesting section relates to fuel-storage facilities. The results in the statistical tables are broken down by social status of householders and type and age of house.]

CRAIG (SIR JOHN). The Mint. A history of the London Mint from A.D. 287 to 1948. Cambridge: Cambridge University Press, 1953. 9½″. Pp. vii + 450. 70*s*.

[To be reviewed.]

FENELON (K. G.). Britain's Food Supplies. London: Methuen, 1952. 7½″. Pp. 212. 15*s*.

[To be reviewed.]

GAYER (A. D.), ROSTOW (W. W.) and SCHWARTZ (A. J.). The Growth and Fluctuation of the British Economy 1790–1850. An Historical, Statistical, and Theoretical Study of Britain's Economic Development. In 2 volumes. London: Oxford University Press, 1953. 9½″. Pp. v + 1028. 84*s*.

[To be reviewed.]

HOBSON (O. R.). A Hundred Years of the Halifax. The history of the Halifax Building Society, 1853–1953. London: Batsford, 1953. 9″. Pp. v + 190.

[To be reviewed.]

INTERNATIONAL ASSOCIATION FOR RESEARCH IN INCOME AND WEALTH. Bibliography on Income and Wealth, Volume II, 1948–1949. Edited by Phyllis Deane. Cambridge: Bowes & Bowes, 1953. 10″. Pp. v + 109. 37*s*. 6*d*.

[The publication of Volume II of this remarkable series follows on that of Volume I (noticed in the ECONOMIC JOURNAL of September 1952, p. 697) with admirable promptitude. The present volume fully maintains the standard, and in fact improves on it by the elimination of a number of minor editorial faults present in the first volume.]

HUTCHISON (T. W.). A Review of Economic Doctrines 1870–1929. London: Oxford University Press, 1953. 9″. Pp. v + 456. 30*s*.

[To be reviewed.]

KEIRSTEAD (B. S.). An Essay in the Theory of Profits and Income Distribution. Oxford: Blackwell, 1953. 8½″. Pp. 110. 10*s.* 6*d.*

[To be reviewed.]

KING EDWARD'S HOSPITAL FUND FOR LONDON. Report on Costing Investigation for the Ministry of Health. London: King Edward's Hospital Fund, 1952. 13″. Pp. 91. 6*s.*

[A report on an inquiry carried out in co-operation by the King Edward's Hospital Fund and the Nuffield Provincial Hospitals Trust. The conclusion in favour of departmental costing is in accord with the conclusion reached by the Nuffield Trust in the report on the part of the inquiry conducted by them. The latter report was noted in the last number of the ECONOMIC JOURNAL, p. 247.]

KUZNETS (S.) and GOLDSMITH (R.). Income and Wealth of the United States: Trends and Structure. Income and Wealth Series II. Cambridge: Bowes & Bowes, 1952. 8½″. Pp. v + 328. 35*s.*

[To be reviewed.]

MACKENZIE (A. D.). The Bank of England Note. A history of its printing. Cambridge: Cambridge University Press, 1953. 7½″. Pp. v + 163. 15*s.*

[To be reviewed.]

The Middle East 1953. A survey and directory of Arabia, Cyprus, Egypt, Iraq, Israel, Jordan, the Lebanon, Libya, Persia, the Sudan, Syria, and Turkey, with geographical, historical, economic and educational surveys, concise information about political, industrial, financial and cultural organisations, and Who's Who in the Middle East. London: Europa Publications, 1953. 10″. Pp. vii + 430. 60*s.*

[The present edition of this well-known work of reference follows the general lines laid down in its predecessors. It has been expanded in various respects, notably on the geographical side, and has been revised to take account of the many far-reaching changes that have occurred in the Middle East in the last couple of years. As is no doubt inevitable in a work of this type, the economic sections are descriptive rather than analytic.]

Monopoly and Public Welfare. By a Study Group in the University of Natal. Pietermaritzburg: University of Natal Press, 1952. 8½″. Pp. 229. 16*s.*

[This volume is composed of a number of individual studies introduced and tied together by Prof. H. R. Burrows. It starts with the experience and legislation in relation to monopoly in Europe and the United States in two chapters both written by Mr. L. Fourie. It goes on in Part II to an appraisal of theory and forms of analysis, and general conclusions regarding effects on price-output and welfare, contributed by Mr. C. M. F. Bruce and Mr. Z. S. Gurzynski and discussions of forms of monopolistic competition provided by Mr. I. K. Allan and Mr. L. P. Green. Part III discusses past legislation in South Africa and proposals for the future, both as recommended by Report No. 327 of the Board of Trade and Industries and as the present authors would like to see it. It prints in convenient form the actual proposals and provides a useful general source of information. The authors have themselves prepared an alternative draft bill, which they believe would provide a better compromise between the need to preserve the interest of the public and to give a system of control, subject to legal safeguards and parliamentary control, but at the same time independent of the executive.]

MOUNSEY (J.). An Introduction to Statistical Calculations. London: English Universities Press, 1953. 7½″. Pp. v + 351. 15*s.*

[The aim of this book is clearly stated in the author's preface: it is to assist students in Commercial and Technical colleges through examinations in statistics. There is also a suggestion, or perhaps a hope, that it may fulfil a rather wider purpose; but this is unlikely. To achieve its main end a very extensive selection of calculations are carefully described, examples are worked out *in extenso*, and many exercises (with numerical answers) are provided. The book will un-

doubtedly be extremely useful for the narrow purpose for which it has been designed. There are, however, grounds for regretting that the author has chosen to use his considerable skill in producing an excellent candidates' companion rather than attempting to widen understanding of the basic principles of the subject.]

NATIONAL INSTITUTE OF ECONOMIC & SOCIAL RESEARCH. 10th Annual Report, 1952. London: N.I.E.S.R., 1952. 9½″. Pp. 36.

[This report contains a full account of the current activities of the Institute, together with details of its forthcoming publications. Research projects now well advanced include those relating to consumers' expenditure, retail trading, migration and location of industry; work at an earlier stage is in progress on the finance of public companies, the stock of capital assets, British economic statistics and the recruitment of industrial personnel. The report states that it is intended that in the future fields of study on the borderland between economics and the other social sciences should occupy a somewhat larger place in the Institute's research programme.]

PAGE ARNOT (R.). The Miners. A history of the Miners' Federation of Great Britain from 1910 Onwards. Years of Struggle. London: Allen & Unwin, 1953. 9″. Pp. 567. 35*s*.

[To be reviewed.]

RHYS-WILLIAMS (JULIET). Taxation and Incentive. London: William Hodge, 1953. 8½″. Pp. 188. 15*s*.

[Reviewed in this issue.]

ROBINSON (H.). Britain's Post Office. A history of development from the beginnings to the present day. London: Oxford University Press, 1953. 9″. Pp. v + 299. 21*s*.

[To be reviewed.]

ROSTOW (W. W.). The Process of Economic Growth. Oxford: Clarendon Press, 1953. 9″. Pp. v + 282. 25*s*.

[To be reviewed.]

ROYAL INSTITUTE OF INTERNATIONAL AFFAIRS. Annual Report of the Council 1951–1952. London: Royal Institute of International Affairs, 1952. 9″. Pp. 71. 1*s*.

[A summary account is given of the many activities of Chatham House and its branches and of the Institutes of International Affairs in the Commonwealth.]

SCOTT (J. F.) and LYNTON (R. P.). The Community Factor in Modern Technology. Paris: Unesco, 1952. 8½″. Pp. 169. 6*s*.

[To be reviewed.]

SCOTT (J. F.) and LYNTON (R. P.). Three Studies in Management. London: Routledge & Kegan Paul, 1952. 8½″. Pp. 220. 18*s*.

[To be reviewed.]

SHACKLE (G. L. S.). Expectation in Economics. 2nd Edition. Cambridge: Cambridge University Press, 1952. 6½″. Pp. vii + 144. 7*s*. 6*d*.

[The first edition of this book was the subject of a review article by Professor C. F. Carter in the ECONOMIC JOURNAL of March 1950. In the present revision Professor Shackle has made certain alterations and corrections in the light of criticisms and suggestions put forward by reviewers of his first edition and by others who have since made contributions to the subject. A list of relevant recent published work is provided in a new preface.]

SHEHAB (F.). Progressive Taxation. A study in the development of the progressive principle in the British income tax. London: Oxford University Press, 1953. 8½″. Pp. 299. 27*s*. 6*d*.

[To be reviewed.]

SILVERMAN (H. A.). The Groundwork of Economics. 4th Edition. London: Sir Isaac Pitman, 1953. 7½″. Pp. v + 141. 8*s*. 6*d*.
[To be reviewed.]

SOLOMONS (D.) (Ed.). Studies in Costing. Edited on behalf of the Association of University Teachers of Accounting. London: Sweet and Maxwell, 1952. 10″. Pp. v + 643. 35*s*.
[To be reviewed.]

STEINDL (J.). Maturity and Stagnation in American Capitalism. Oxford University Institute of Statistics, Monograph No. 4. Oxford: Blackwell, 1952. 9½″. Pp. v + 248. 30*s*.
[To be reviewed.]

TOYNBEE (A.) and ASHTON-GWATKIN (F. T.) (Eds.). The World in March 1939. Survey of International Affairs, 1939–1946. London: Oxford University Press (under the auspices of the Royal Institute of International Affairs), 1952. 9½″. Pp. xvi + 546. 45*s*.
[This volume has already been widely reviewed in other journals. Its interest is essentially political, and the treatment of economic issues by H. C. Hillmann in Part II of the book is chiefly concerned with their military and political implications. The author here provides a useful though not on the whole very original survey of the economic preparations for war made by the great powers in the 1930s.]

VINER (J.). International Trade and Economic Development. Lectures delivered at the National University of Brazil. London: Oxford University Press, 1953. 7½″. Pp. 120. 12*s*. 6*d*.
[In these provocative lectures Professor Viner gives his readers a great deal to think about and goes out of his way to tread on a good many corns in the process. In the earlier lectures his chief objective is to show that the modern reaction against the classical theory of international trade, both in its real and in its monetary aspects, has been pushed too far. The subsequent lectures deal with the relation between government economic planning and foreign trade—Professor Viner here reiterates his well-known view that stable conditions of international trading are impossible in a world of planned economies—and conclude with a discussion of the obstacles standing in the way of the development of poor countries, emphasising here the erroneousness of thinking of development necessarily in terms of industrialisation. The treatment is discursive, and a wide range of related topics are touched on. Professor Viner contrives to pack a great deal of interesting if not on the whole very novel material into a small compass, and the forcible and lucid presentation of the argument is extremely stimulating. At the same time it must be said that at several points there is more than a suspicion of special pleading. Two examples may be quoted. In order to criticise the stagnation thesis, Professor Viner states it in what is surely a quite unnecessarily untenable form: few economists nowadays would maintain, as he implies, that in the future the alternation of boom and slump is likely to cease and to be replaced by a continuous unremitting slump; the suggestion is rather that booms will be anæmic and/or short and slumps severe and/or protracted. The statement (p. 66) that "*a priori*, the most reasonable assumption would seem to be that [price- and income-elasticities of demand] would in general be approximately equal" is surely an example of the danger of trying to deduce probabilities without evidence, since the two types of elasticity stand on quite a different footing. But if Professor Viner's destructive comments are at times overstated and occasionally have an air of superficiality, his conclusions are invariably good tempered, reasonable and judicious.]

ZWEIG (F.). The British Worker. London: Penguin Books, 1952. 7″. Pp. 243. 2*s*. 6*d*.
[Dr. Zweig has established for himself by his previous publications a reputation as a prolific and highly individual writer on the human aspects of industrial society in Great Britain. In the present book he has drawn on the results of his work over a period of years to give a general picture of the life and character of the

working-man in urban Britain, making large use of quotations from remarks and statements made to him by working-men in his conversations with them. The result is a document remarkable for its imaginative understanding and freshness of approach. Mention of some of the leading topics may give some idea of its scope: they include the economic and personal relationships between members of the working-class family, the attitude to work, to money and to politics, the intense preoccupation with sport, and the differences between the outlook and interests of men of different ages—with the perennial problem here of distinguishing differences due to the life-cycle of the individual from those due to changes in social *mores* from one generation to another. The faults of the book are on the surface: the jerky style, the occasional tendency to excessive generality and on some points judgments which one cannot but feel to be misconceived. It may be, too, that relatively little of what Dr. Zweig says will be unfamiliar to readers with a broad experience of working-class life. But that does not mean that it was not amply worth while to have it written down and set in perspective, for the benefit both of social workers with middle-class backgrounds and of historians in later generations—for had there been a Dr. Zweig at work in 1850, would not his book be among the most valued sources available to the social historian?]

Indian

CHANDRASEKHAR (S.). Hungry People and Empty Lands. Baroda: Indian Institute for Population Studies 1952. 10″. Pp. 306. Rs. 15/-.

[Prof. Chandrasekhar, who is head of the Department of Economics of the University of Baroda, and formerly in charge of demographic research in UNESCO, argues that uncontrolled human fertility presents one of the world's greatest problems. World population is increasing by about 25 millions a year, and has grown from about 1,100 millions in 1850 to about 2,400 millions in 1950. The practical and political problems are immensely increased by the facts that the growth is very unequal in different regions and that initially the regions are very unevenly populated. There are a group of "full" lands with something in excess of 400 per square mile in the more heavily populated countries of Europe and Japan, closely followed by India, China and Indonesia, where density is near to or in excess of 100 per square mile (India is over 260 per square mile). On the other hand, there is a group of "empty" lands in most of which density is under 5 per square mile. Prof. Chandrasekhar is principally worried about the possibilities of migration from the points of acute population pressure in South-east Asia to some of the "empty" areas in the Pacific and in Africa. He assumes that the overcrowded areas of Europe can and will find a solution to their problems in the thinly settled "white" countries. His book represents a scholarly and scientific study of the very real difficulties of policies both to control and limit population growth and to relieve the pressures where they have become acute. "What is needed in Asia is to make every woman deliver one baby where she delivered two or more before and make two blades of grass grow where one grew before."]

DATTA (BHABATOSH). The Economics of Industrialisation. Calcutta: The World Press, 1952. 8½″. Pp. v + 291. 21*s*.

[The author, who is Professor of Economics in Presidency College, Calcutta, began this study as a Ph.D. Thesis at the London School of Economics, but has evidently enlarged and developed it subsequently. He begins by stressing the importance of approaching the whole problem of industrialisation not (as was customary down to the 1930s) from the angle of increasing national power or reducing dependence on imports but rather from the angle of high-income employment for underemployed agricultural workers. He argues that even if active measures are taken to develop agriculture and to make more land capable of cultivation by irrigation and the like, there will still remain a large underemployed population with holdings considerably below the optimum, and that this number will be constantly reinforced by population growth if nothing is done to raise standards and reverse the present population trends. He goes on, therefore, to study skill-formation, capital requirements, the place of foreign capital in development and the implications for foreign trade. Prof. Datta ends on a note of moderate optimism, but he has managed to produce a study in which realism and willingness to face difficulties are much more evident than in many such books.]

GORWALA (A. D.). The Role of the Administrator: Past, Present and Future. Poona: Gokhale Institute of Politics and Economics, 1952. 8½". Pp. 44. Rs. 2/-.

[This is the Kale Memorial Lecture for 1952. The lecturer looks back on a life of Indian Civil Service administration covering the period 1924–47 and attempts to see the contrasts between the earlier and later phases. He gives a charming, kindly and appreciative account of many of the best features of the training and traditions of the Indian Civil Service, and of the way that a young member of the Service learned the standards required by it and the moral and physical courage that was demanded of him. But he retains a perspective that enables him also to see its weaknesses: the concentration on the duties of the "Security State"; the fact that "there was a certain kind of economic development . . . following the accepted pattern of state works, the provision of irrigation or of electrical power . . . but it was development not based on any economic ideology." He contrasts with this earlier period the hectic improvisations of the war years and the avalanche of new duties, combined with shortage of staff, which came with independence, but above all the new relation of the administrator to his Minister and to the people that he is administering under a democratic regime. Mr. Gorwala is as frank and forthcoming, and at the same time as understanding and sympathetic, about these as about the earlier phase. Indeed these forty-four pages give a better picture of what has happened to Indian administration than almost anything else available.]

PATEL (S. J.). Agricultural Labourers in Modern India and Pakistan. Bombay: Current Book House, 1952. 8½". Pp. 169.

[Dr. Patel, who is working in the U.N. Department of Economic Affairs and the Technical Assistance Administration, wrote this study as a Ph.D. Thesis at the University of Pennsylvania. It brings out the alarmingly rapid growth of a class of landless labourers, partly as a consequence of the decline of rural handicrafts and of the integrated life of the Indian village with its joint dependence on agriculture and local handicraft production, but partly also as a resultant of population growth. Unfortunately, changes of definition in the Census make the measurements very uncertain, and it is sometimes difficult to feel satisfied that Dr. Patel is not placing excessive reliance on the accuracy of very uncertain evidence, but is it very obvious that here is a problem of great and growing importance and danger.]

SHROFF (A. D.). The Conciliation and Arbitration of Industrial Disputes in India. With special reference to Bombay Province. Bombay: The Popular Book Depot, 1953. 8½". Pp. vii + 270. Rs. 16/4.

[After a general discussion of the basic principles of conciliation, mediation and arbitration this book examines their history in India, with rather special reference to Bombay Province. The modern Labour Code dates from 1922, but the first and important Trades Disputes Act was in 1929, amended by a number of subsequent Amendment Acts, and finally replaced by a new Act of 1947. Miss Shroff believes that on the whole the legislation has improved relations, but does not think that any such legislation alone can establish industrial peace.]

SOVANI (N. V.). Social Survey of Kolhapur City. Vol. II, Industry, Trade and Labour. Vol. III, Family Living and Social Life. Poona: Gokhale Institute of Politics and Economics, 1951. 9". Vol. II, pp. i + 346. Vol. III, pp. iii + 330. 18*s.* each volume.

[These two volumes in the series of surveys of the City of Kolhapur contain a great deal of detailed information about the industries and trade of the city and about living conditions. Since an octroi provides records of imports, there is very much more knowledge of the flow of goods and purchases than normally exists, and records go back a hundred years. Gold- and silver-smiths have throughout the period formed the pre-eminent industry of the city. There are, however, a large number of other industries, mostly on a relatively small scale. A great deal of information has been secured about trade and the turnover, capital employed and earnings from it. The study of living conditions and family life covers subjects as different as family size, housing conditions, occupational distribution, incomes and poverty, religious and social activities and the use of leisure. A final chapter deals with local government and public health.]

American

BALLANTINE (J. W.). Formosa. A Problem for United States Foreign Policy. Washington: The Brookings Institution, 1952. 8½″. Pp. v + 218. $2.75.

[The author surveys the background of the present situation with regard to Formosa and discusses the problems which it poses for United States foreign policy. Mr. Ballantine was for many years an officer of the United States Foreign Service, and his approach is that of the practising diplomatist rather than that of the academic student.]

CAMPBELL (W. V.), ENGLISH (R. J.) and LAMPROS (G.). Current Operating Expenditures and Income of Higher Education in the United States, 1930, 1940 and 1950. New York: Columbia University Press (London: Geoffrey Cumberlege), 1953. 8½″. Pp. v + 97. 16*s*.

[This is described as a Staff Technical Paper of the Commission on Financing Higher Education, which in turn is sponsored by the Association of American Universities. It publishes figures for the three years 1930, 1940 and 1950 for a variety of different types of institution and a variety of different forms of expenditure. Total operating expenditure is shown as having risen from $528 m. in 1930 to $661 m. in 1940 and $2,182 m. in 1950. It is not possible to say how much of this is due to increased scale of operations and how much to better coverage of the returns. New institutions are added in later years in part because they have entered the field of activity, in part because they have produced accounts in analysable form. Columbia University and Johns Hopkins University both had to be excluded, for example, from the 1940 figures, but are included for the other years. Despite such difficulties of interpretation, these tables will be of great interest to anyone concerned with university financial policy.]

CLEMENCE (R. V.). The Economics of Defense. A primer of American mobilization. Harrisburg, Pennsylvania: Stackpole, 1953. 8½″. Pp. v + 138.

[With this book Professor Clemence maintains but does not perhaps enhance the reputation as a writer of unusually lucid short text-books which he established with his earlier *Income Analysis* and (in collaboration with F. S. Doody) *The Schumpeterian System*. *The Economics of Defense* is really an introductory textbook on inflation written with special reference to the circumstances of American rearmament. The first few chapters contain a clear but very elementary exposition of circular flow model diagrams illustrative of "peacetime," "war" and "defense" economies. Later chapters deal with the various problems of inflation, the shifting of resources and direct and indirect controls. Most of this is well done at its chosen level of abstraction, but it is a pity that the section on cost-price inflation goes astray by neglecting the effect of wage increases on the money value of investment. A more general doubt is whether more than a very limited purpose can be served by a treatment which is entirely non-quantitative and which rests on such highly abstract assumptions as the prevalence of perfect competition in all markets except the labour market.]

NATIONAL BUREAU OF ECONOMIC RESEARCH. Studies in Income and Wealth, Volume 15. Conference on Research in Income and Wealth. New York: National Bureau of Economic Research, 1952. 9½″. Pp. vii + 230. $3.50.

[To be reviewed.]

COPELAND (M. A.). A Study of Moneyflows in the United States. New York: National Bureau of Economic Research, 1952. 9½″. Pp. ix + 338 + 241 pages of appendices. $7.50.

[To be reviewed.]

COWLES COMMISSION FOR RESEARCH IN ECONOMICS. Economic Theory and Measurement. A Twenty Year Research Report, 1932–1952. Chicago: Cowles Commission, 1952. 9″. Pp. 180.

[The chief feature of this retrospective report is a long survey by Carl F. Christ of the personalities and activities of the Cowles Commission since the time

when it was founded in 1932 by Alfred Cowles. Cowles was the president of an investment counselling firm, and his interest in mathematical economics and statistics was originally aroused by an inquiry which he carried out into the accuracy of the predictions of professional stock-market forecasters during the period 1928–32].

DAVEY (H. W.). Contemporary Collective Bargaining. New York: Prentice Hall, 1952. 9″. Pp. v + 532.

[An intelligent and well-arranged text-book designed for use by those actually engaged in the process of collective bargaining as well as by academic students. The coverage of the factual sections of the book is exclusively American, but some of the analytical chapters have more general application. Unusually full bibliographies are provided at the end of each chapter.]

DIEBOLD (W.). Trade and Payments in Western Europe. A study in economic co-operation 1947–1951. New York: Harper Brothers, for the Council on Foreign Relations, 1952. 8½″. Pp. vi + 488. 40*s*.

[To be reviewed.]

FABRICANT (S.) (assisted by R. E. LIPSEY). The Trend of Government Activity in the United States since 1900. New York: National Bureau of Economic Research, 1952. 9½″. Pp. vii + 268. $4.0.

[To be reviewed.]

GERSCHENKRON (A.). A Dollar Index of Soviet Machinery Output, 1927–28 to 1937. Santa Monica, California: RAND Corporation, 1951. 9½″. Pp. v + 357.

[Reviewed in this issue.]

HALEY (B. F.) (Ed.). A Survey of Contemporary Economics. Volume II. Homewood, Illinois: Richard D. Irwin, for the American Economic Association, 1952. 9″. Pp. v + 474.

[To be reviewed.]

HALL (H. R.). Some Observations on Executive Retirement. Boston: Harvard University Graduate School of Business Administration, 1953. 8½″. Pp. vii + 298. $3.75.

[This is a study of the personal problems of retirement and of the ways in which business firms can help to prepare their executives to meet them. It is based principally on interviews with business administrators and retired executives.]

HANSEN (A. H.) and CLEMENCE (R. V.). Readings in Business Cycles and National Income. New York: W. W. Norton, 1953. 8½″. Pp. v + 588. $3.95.

[To be reviewed.]

HAZELETT (C. W.). Practical Answers to Inflation, Unemployment Taxation and Political Leadership. Greenwich, Connecticut: Incentivist Publications, 1952. 7½″. Pp. 243. 50c.

[The system designated by the author " incentive taxation " and expounded by him in this book is based on two ideas. The first is the prevention of unemployment by a tax on idle money, and the second is the use of a tax on consumers' expenditure as the chief source of government revenue, the latter tax also being capable of use as an anti-inflationary instrument. Both ideas have respectable antecedents and have much to recommend them, as have also many of the detailed suggestions made by the author for the execution of his proposals. It is a pity that he distracts attention from the merits of his ideas by making exaggerated claims for them and by intemperate criticisms of views different from his own.]

HENDERSON (J. S.). Production and Consumption. A Mathematical Reformulation. Alabama: University of Alabama Press, 1952. 11″. Pp. 83. $2.

[The mathematician tends to see the central problem of economics as the theory of maximisation subject to constraint, and this point of view has received its most consistent exposition in Samuelson's *Foundations of Economic Analysis* (1947). In the present work (claimed to have been developed independently of that of Samuelson) Henderson systematically extends this approach by considering multiple constraints; this allows treatment, for example, of the theory of rationing, and the theory of long-run adaptation viewed as the relaxation of short-run constraints. The exposition is heavily mathematical and unnecessarily obscure. A shortened version of the central theme of this book has appeared in the January 1953 issue of *Econometrica* (pp. 155–68).]

ISARD (W.) and WHITNEY (V.). Atomic Power. An Economic and Social Analysis. London: Allen & Unwin, 1952. 9″. Pp. vii + 235. 37*s*. 6*d*.

[This book, by a Harvard economist and a sociologist of Brown University, covers very much the same field as the book by Schurr and Marschak reviewed in the issue of December 1952. It begins with a brief attempt to summarise the technical background: its broad conclusion is that "until advances are achieved in nuclear engineering and hygiene so radical that they are not even in mind today, nuclear energy will be practically useful as a source of electric energy only where economic or political considerations justify a heavy capital investment in shields and machinery." Their estimate of cost, on the basis of the possible techniques of early commercial plants and assuming a 50% plant factor, is 14·5 mills per kilowatt hour, which might be reduced to 9·4 mills at an 80% plant factor. The comparable cost in a coal-burning plant with coal at $7 a ton (it varies in the majority of plants between $3 and $7) is about 7·1 mills at 50% or 5·6 mills at 80% plant factor. This book seems to support the conclusion that it is only if fuel costs are very high, or if nuclear energy is a by-product of other, possibly defence, activities, that it is likely to be important in the near future.]

KEYES (LUCILLE S.). Federal Control of Entry into Air Transportation. Cambridge, Mass.: Harvard University Press, 1951 (London: Geoffrey Cumberlege, 1952). 8½″. Pp. 405. 40*s*.

[A critical analysis of the working of the Civil Aeronautics Act in the light of the Chamberlinian theory of monopolistic competition.]

LANCASTER (J. L.). County Income Estimates for Seven Southeastern States. A report of the Conference on the Measurement of County Income. Charlottesville, Virginia: Bureau of Population and Economic Research, University of Virginia, 1952. 11″. Pp. 246. $5.

[This is a more comprehensive report of the results of a research project of which some preliminary results have already been published. The data provided include income in total and per head for each county in the states concerned in 1939 and 1947, together with particulars of sources of income by industrial groups and of distribution of income between wages, profit and other shares.]

MCCARTNEY (E. S.) and SPARROW (F. H.) (Ed.). Papers of the Michigan Academy of Science, Arts and Letters. Vol. XXXVII (1951). Ann Arbor: University of Michigan Press (London: Geoffrey Cumberlege), 1952. 9½″. Pp. v + 513. 72*s*.

[This contains four essays on economic topics: "A Conceptual Framework for Social Science," by Kenneth E. Boulding; "The Development of Low Income Countries," by John M. Hunter; "Settlement of Airline Labor Disputes," by Mark L. Kahn; and "The Economic Implications of the United States Denazification Program in Germany," by Marguerite Patton.]

MACHLUP (F.). The Economics of Sellers' Competition. Model analysis of sellers' conduct. Baltimore: The Johns Hopkins Press, 1952. 9½″. Pp. 582. $6.50.

[To be reviewed.]

MACHLUP (F.). The Political Economy of Monopoly. Business, labor and government policies. Baltimore: The Johns Hopkins Press, 1952. 9½". Pp. 544. $5.50.

[To be reviewed.]

NORRIS (RUBY T.). The Theory of Consumer's Demand. Revised Edition. New Haven: Yale University Press (London: Geoffrey Cumberlege), 1952. 9½". Pp. 237. 24*s*.

[The first edition of this book was reviewed by Mrs. Robinson in the ECONOMIC JOURNAL of April 1943. The principal change in the present revision is the addition of a new chapter in which the author considers the implications for marginal utility theory of what was the most original contribution of her book as it first appeared, the concept of commodity specialisation. This is the name given to the process by which, for example, as a consumer's income increases, more numerous pairs of shoes designed to fulfil more specialised functions are substituted for fewer, more adaptable, pairs, thus giving rise to economies of large-scale consumption.]

RIKER (W. H.). Democracy in the United States. New York: The Macmillan Company, 1953. 8½". Pp. 428. $2.25.

[In the first chapter Professor Riker sets forth his definition of democracy as "a form of government in which the rulers are fully responsible to the ruled in order to realise self-respect for everybody." The remainder of the book is an analysis of American political institutions directed to ascertaining the extent to which they satisfy this definition.]

VAN ROYEN (W.) and BOWLES (O.). The Mineral Resources of the World. Atlas of the World's Resources, Vol. II. New York: Prentice Hall, for the University of Maryland (London: Constable), 1953. 12½". Pp. 181. 70*s*.

[This elaborately designed statistical atlas contains maps illustrative of world production and deposits of minerals. The maps are accompanied by a full commentary dealing with both geological and economic aspects.]

RUSSELL SAGE FOUNDATION. Annual Report 1951–1952. New York: Russell Sage Foundation, 1952. 9". Pp. 37.

[The purpose of the Foundation is "to advance the utilisation of social research in social practice." The fields of study of its current research programme include corporate philanthropy, training for the professions, public health, child care, education and criminology.]

SARTON (G.). A Guide to the History of Science. With introductory essays on science and tradition. Waltham: Chronica Botanica (London: Wm. Dawson), 1952. Pp. xviii + 316. $7.50.

[Prof. Sarton's Guide, which is the culmination of thirty-five years of work, is all embracing. It includes all branches of natural and exact science, and its comprehensive bibliographies will be the starting point for many future scholars. The history of science is the history of man's progress from imaginative ignorance to an even more terrifying knowledge. Living man is limited in all his actions by the state of knowledge of his day, and economic and social science is a reflection of that knowledge. A very great degree of individuality is required to enable the slightest progress to be made. Fortunately there are exceptional persons. Prof. Sarton argues that the influence of social writers like Voltaire and Rousseau upon the French Revolution has been fully recognised, possibly over-emphasised; the influence of science has been underestimated. And it is only recently that the history of science has been developed. Prof. Sarton can now be regarded as the *doyen* of the discipline.]

SCHMID (C. F.), KALBACH (W. E.), MILLER (V. A.) and SHANLEY (F. J.). Population and School Enrolment Trends and Forecasts, State of Washington. Seattle: Washington State Census Board, 1953. 10". Pp. 60.

[This comprises two separate but related studies. The first deals with projections of fertility, mortality and migration trends for the State of Washington

for the period between now and 1965. The second, based on the first, contains estimates of the numbers likely to be seeking admission to schools and colleges in the State during the same period.]

SOCIAL SCIENCE RESEARCH COUNCIL. Annual Report 1951–1952. New York: Social Science Research Council, 1952. 9". Pp. 73.

[This report contains accounts of the membership and activities of the various committees and their staffs which carry out the bulk of the work of the Council in the many fields of study in which it is interested.]

STIGLER (G. J.) and BOULDING (K. E.) (Ed.). Readings in Price Theory. American Economic Association Series. London: Allen & Unwin, 1953. 9". Pp. v + 568. 30*s*.

[This is the latest addition to Messrs. Allen & Unwin's useful series of English editions of the *Readings* volumes issued by the American Economic Association. The American edition of *Readings in Price Theory* will be reviewed in a forthcoming number of the ECONOMIC JOURNAL.]

SUTTON (J. S.). The Prosperity Dilemma. A study of the profit motive. Kansas City: Brown-White-Lowell, 1953. 8½". Pp. vii + 129. $6.

[The author claims this to be "the first restatement of commercial [or mercantilist] economic thought to appear in the English language in over 200 years." The "Prosperity Dilemma" is the supposed fact that commercial prosperity is dependent on a continuous increase in the supply of money, which must ultimately extinguish altogether its purchasing power. The solution favoured by the author is the use of a form of money which would be current for a stated limited period only.]

TOSDAL (H. R.). Assisted by CARSON (W.). Salesmen's Compensation. In two volumes. Boston, Mass.: Harvard University Graduate School of Business Administration, 1953. 8½". Vol. I, pp. v + 459. Vol. II, pp. v + 461. $11.50.

[Volume I contains a general discussion of the level and form of payments made to salesmen in practice and of the problems involved in evaluating salesmen's performance with a view to the establishment of incentive payment schemes. It also contains the results of a questionnaire circulated to many firms dealing with these questions. The second volume is devoted to a more detailed analysis of the compensation schemes in force for salesmen in thirty selected firms.]

WEILER (E. T.). The Economic System. An analysis of the flow of economic life. New York: The Macmillan Company, 1952. 9½". Pp. vii + 868. $5.75.

[To be reviewed.]

WILLETT (A. H.). The Economic Theory of Risk and Insurance. Philadelphia: University of Philadelphia Press (London: Geoffrey Cumberlege), 1951. 8½". Pp. 103. 18*s*.

[This is a reprint of a book originally published in a small edition in 1901. Since then it has been much used, especially by students of insurance, and is often quoted in the literature of the subject. The original edition, which is now scarce, was reviewed by T. N. Carver in the ECONOMIC JOURNAL of June 1902.]

French

L'Intégration Économique de l'Europe. Par un Groupe d'Étude International sous la direction de Lucien De Sainte-Lorette. Dotation Carnegie pour la paix internationale. Paris: Presses Universitaires de France, 1953. 9". Pp. vi + 332. 860 frs.

[To be reviewed.]

LHOMME (J.). La Politique Social de l'Angleterre Contemporaine. Salaires, coût de la vie, emploi. Paris: Presses Universitaires de France, 1953. 9″. Pp. 517. 1800 frs.
[To be reviewed.]

MALISSEN (M.). L'Autofinancement des Sociétés en France et aux États-Unis. Paris: Librairie Dalloz, 1953. 8½″. Pp. ix + 246.
[To be reviewed.]

MARCHAL (A.). La Pénsée Économique en France depuis 1945. Paris: Presses Universitaires de France, 1953. 9″. Pp. 240. 700 frs.
[To be reviewed.]

German

BRANDT (K.). Struktur der Wirtschaftsdynamik. Frankfurt am Main: Fritz Knapp, 1952. 8½″. Pp. 198.
[A thorough exposition of the modern theories of economic growth and dynamics. The story begins, logically enough, with an account of the nature of causality in the physical sciences and the meaning of static, dynamic and kinetic theories. It then reviews the theories of Samuelson, Harrod and others. It may be recommended as a guide to the literature.]

EGNER (E.). Der Haushalt. Eine Darstellung seiner volkswirtschaftlichen Gestalt. Berlin: Duncker & Humblot, 1952. 9½″. Pp. 516. DM. 32.
[In this treatise Professor Egner (Göttingen) treats the keeping of a household as an essentially human activity which is the basis of the social economy. Three types of household are distinguished—the family household, which is quantitatively the most important, and the institutional and collective households—and these are examined historically and sociologically. The greater degree of interdependence of modern economies is here seen as a threat to the independence and unity of the family household.]

MÜLLER-OHLSEN (L.). Strukturwandlungen und Nachkriesgprobleme der Wirtschaft Frankreichs. Kiel: Instituts für Weltwirtschaft an der Universität Kiel, 1952. 9½″. Pp. 205. DM. 16.
[This survey of the post-war economic problems of France emphasises the extent to which they are of long-term standing. The features of a stagnant economy living on its capital are described with the help of statistical tables of the major economic series covering the last twenty years, and this provides a background for an exposition of the objects of the Monnet plan.]

WERNET (W.). Handwerkspolitik. Grundriss der Sozialwissenschaft No. 13. Göttingen: Vandenhoeck & Ruprecht, 1952. 9½″. Pp. 325. DM. 2280.
[Dr. Wernet's book is an exhaustive account of the development, organisation and problems of craft industries in Germany. It is divided into four parts. Part I describes the organisation of craft industries within the changing political and social framework. The second part describes recruitment and training of the artisan and the third part the law relating to the industries concerned. A final section deals more exclusively with the economic problems of crafts. In this last part by far the most interesting section is that on the organisation of social security. The treatment on the finance of crafts and on marketing problems is all too brief for the industrial economist.]

Swiss

HUNOLD (A.) (Ed.). Vollbeschäftingung, Inflation, Planwirtschaft. Beiträge von A. AMONN, L. BAUDIN, W. EUCKEN, C. BRESCIANI-TURRONI, H. S. ELLIS, F. A. HAYEK, J. JEWKES, G. IVERSEN, F. A. LUTZ, W. ROPKE, J. VINER. Zurich: Eugen Rentsch, 1951. 8½". Pp. 362. DM. 22.80.

[According to the editor this work is "an appeal for a return to sanity at a time when the most obviously fallacious doctrines are uncritically accepted and spread abroad." The "fallacious doctrines" are those of the "offenbare Keynesianen," who are creatures of the devil. To Röpke, Amonn and Eucken, the Keynesian identity can be written

Keynes = Full Employment = Planned Economy ∴ Keynesianism is bad.

There is no real attempt on their part to understand and to explain to the unwary German that there is a distinction to be made between Keynesian assumptions, analyses and policies. Fortunately, more sensible and positive criticism of the more naïve utterances of the Keynesian left-wing is found in the essays by Jewkes, Ellis, Viner (a translation of his review of the *United Nations Report on Full Employment* in the *Quarterly Journal of Economics*) and Lutz. The essay by the last mentioned on unemployment and credit expansion is an honest attempt to determine what conditions will favour the use of credit expansion alone as a means of combating depression.]

LUTOLF (F.). Die Theorie der monatären Krieslaufsphären. Bern: Francke, 1952. 9½". Pp. 137. S. Fr. 10.50.

[This dissertation surveys the history of the quantity theory of money and attempts to integrate it with Keynesian macro-economic writings.]

Dutch

TINBERGEN (J.). On the Theory of Economic Policy. Contributions to Economic Analysis I. Amsterdam: North-Holland Publishing Co., 1952. 8½". Pp. 78. 13*s*.

[This booklet provides a more elaborate treatment of the type of application of econometric methods to problems of policy set forth in Chapter 8 of Professor Tinbergen's *Econometrics*. The four types of variable entering into the analysis are first distinguished, namely data, targets, instruments and irrelevant variables, and an account is given of the various kinds of relationship that may exist between them. Some examples are then shown of the simplest case, in which the number of target variables equals the number of available instruments. Subsequent chapters deal with more complicated cases, such as those characterised by the presence of "boundary conditions," where there is a limited range of values that it is possible or desirable that one or more of the variables should assume (*e.g.*, prices cannot be negative). Among other issues discussed are how to measure the efficiency of alternative instruments and how to assess the reliability of the results arrived at in face of the likelihood of inaccuracy in the data. Professor Tinbergen's characteristic lucidity and precision in exposition are in evidence throughout.]

ZIMMERMAN (L. J.). The Propensity to Monopolize. Contributions to Economic Analysis, II. Amsterdam: North-Holland Publishing Co., 1952. 8½". Pp. 100. 15*s*.

[The argument of this book runs as follows. The increase in profits resulting from the transformation of a competitive industry into a monopoly will be greater the lower the elasticity of the industry's demand curve and the higher the elasticity of its supply curve. The "propensity to monopolise" may therefore be defined as the ratio of the elasticity of supply to the elasticity of demand. Now when the supply elasticity is high and the demand elasticity is low, competition is likely to give rise to anti-damped cobweb cycles in the event of there being a lag in the response of supply to price; in just those cases, therefore, where a monopoly is most likely to be formed, a monopoly (suitably controlled to prevent profiteering, etc.) is also most likely to be desirable in the interests of stability.

This is the author's main argument; he also draws certain analogies in the theories of international trade and income determination. In seeking to formulate theoretically the conditions most favourable for the creation of monopoly, Dr. Zimmerman sets himself a promising task. But his treatment of it seems subject to serious criticisms. In the first place the assertion that the higher the elasticity of supply, the larger the increase in profits available from the formation of a monopoly is valid only if the rising tendency of the supply curve is due exclusively to the inefficiency of marginal firms, causing rents to accrue to intra-marginal entrepreneurs as output increases. If the rise in supply price is due to any extent to inelasticity in the supply of outside factors of production or to external diseconomies, the conclusion is no longer true, and may be seriously misleading. In the second place, is not the inducement to form a monopoly often dependent as much on the absolute level of profits under competitive conditions as it is on the amount by which profits can be *increased* by monopolisation? Dr. Zimmerman is driven by the logic of his argument to the unplausible assertion (pp. 75–6) that "the well known international commodity agreements from the thirties were born not because the elasticity of supply was small, but on the contrary, because it was very high." Surely in these cases the formation of a monopoly was attractive because the low elasticity of supply caused producers to be particularly hard hit by the fall in demand (*despite* the fact that monopolisation was perhaps capable of bringing less relief than would have been the case had supply been more elastic). Finally, reference to the cobweb theorem seems much too narrow a basis for the conclusion that a high elasticity of supply is inconsistent with market stability under competitive conditions.]

Austrian

JOELSOHN (W.). Die Theorie der Säkularen Stagnation. Vienna: Springer, 1952. 9″. Pp. 136. 17*s*.

[Hansen's stagnation thesis is here expounded for the benefit of the German student. Many of the references to the original material seem unnecessary at the level of exposition adopted.]

Italian

BRESCIANI-TURRONI (C.). Corso di Economia Politica. Vol. I. Teoria generale dei fatti economici. Milan: Guiffrè, 1953. 10″. Pp. 434. Lire 2000.

[To be reviewed.]

MORSELLI (E.) (Ed.). Archivio Finanziario. Annali degli studi tributari. Volume III. Padua: Cedam, 1953. 10″. Pp. 551. Lire 3600.

[This contains a large number of articles on public finance by Italian authors, together with short reviews of books and lists of published articles on public finance and allied topics.]

Mexican

RAMIREZ (M. P.). La Esuela Nacional de Economia. Esbozo Historico 1929–1952. Mexico City: Universidad Nacional Autonoma de Mexico, 1952. 9″. Pp. 480.

[An account of the work and personalities of the school since its foundation.]

Japanese

TOMINAGA (Y.). The Truth of Money. A doctrine on social reconstruction by means of ticket money. Yokohama: New Liberalist Economics Research Institute, 1952. 8½″. Pp. v + 199. $2.50.

[Mr. Tominaga claims that a proper understanding of the "nominalist" theory of money provides the clue to solving all the world's chief economic

problems. Money is the " medium of purchase "—not the medium of exchange, for that suggests that money has or should have inherent value, whereas it is the essence of the author's position that ticket money, itself devoid of inherent value, is the best. In his view, control of the quantity of money under a regime of tickets is not merely an economic panacea, but also extremely easy to carry out. Mr. Tominaga is an enthusiastic amateur who admits his comparative unfamiliarity with the literature of the subject. The only economists whose views he discusses at any length are Marx, Knapp and Irving Fisher.]

Official

BRITISH

CITY OF BIRMINGHAM ANNUAL ABSTRACT OF STATISTICS, No. 2. Edited by R. Padley and W. Taylor. Birmingham: City of Birmingham Central Statistical Office, for the Corporation, 1953. 11″. Pp. iii + 140.

[The chapter headings of this enterprising and well-designed abstract are population, vital statistics, health, housing, education, judicial and protective services, care of children, miscellaneous services, transport and communications, public utilities, employment and industry, government and meteorology. Purely financial statistics are not included, but appear in a separate publication of the City Treasurer.]

CANADIAN

COMBINES INVESTIGATION COMMISSION, DEPARTMENT OF JUSTICE OTTAWA. Fine Papers. Ottawa: Department of Justice, 1952. 9½″. Pp. i + 433.

[Much of the space of this report and summary of inquiry proceedings is taken up with the question whether prices and conditions of sale were " agreed " amongst producers and merchants or merely " discussed." The findings of the Commissioner are that the seven fine paper mills in Canada and the more numerous merchants, organised in their Trade Association, have engaged in price fixing, loyalty discount arrangements and other practices calculated to lessen competition to the detriment of the public in a manner constituting the creation of a combine within the meaning of the Combines Investigation Act.]

NIGERIAN

DEPARTMENT OF COMMERCE AND INDUSTRIES, LAGOS. Handbook of Commerce and Industry in Nigeria 1952. Lagos: Department of Commerce and Industries, 1952. 9½″. Pp. 127. 5*s*.

[This first issue of a new handbook includes both general information about the geography, population, constitutional development, budget, currency, taxes, Marketing Boards and so on, as well as a great deal of very useful detail about banking facilities (including the location of branches), hotels and rest houses, road, railway and shipping facilities, Customs and Excise duties, industrial legislation, and general advice and hints to visiting business men.]

INDONESIAN

THE JAVA BANK. Report for the Financial Year 1951–1952. Djakarta: The Java Bank, 1952. 10½″. Pp. 246.

[This is principally devoted to an account of economic developments in Java during the year, with extensive references to events in previous years.]

AMERICAN

UNITED STATES DEPARTMENT OF COMMERCE. Foreign Aid by the United States Government 1940–1951. Prepared by the Clearing Office for Foreign Transactions. Washington: U.S. Government Printing Office, 1952. 11½″. Pp. 118. $1.

[This statistical and descriptive account of the foreign aid rendered by the United States during and since the war contains information relating to its quantity, direction, form, conditions, purposes and administration. Its treat-

ment of the broader economic context of foreign aid is only brief and has no pretence to originality or scholarship, but a good deal of useful detailed information is included.]

INTERNATIONAL

BANK FOR INTERNATIONAL SETTLEMENTS. Twenty-Second Annual Report. Basle, 1952. 12″. Pp. 2 + 265.

[This report contains the usual valuable survey of events during the year, with particular reference to problems of monetary stability and international exchange arrangements.]

COUNCIL OF EUROPE. Economic Relations with Overseas Countries. Report by the Secretariat General. Strasbourg: Council of Europe, 1952. 9″. Pp. 147.

[This is the report of a Working-Party appointed by the Consultative Assembly of the Council of Europe to prepare "a study of methods for achieving a closer co-ordination between the economies of Member States of the Council of Europe and those of the overseas countries having constitutional links with them." Sir Cecil Kisch was Chairman, and English Members included Mr. Bareau, Mr. Brech and Mr. Page. A full and detailed summary of conclusions cannot be reproduced here. It must suffice to say that the Working-Party recommended the expansion of multilateral trade unhindered by quota restrictions, the restoration of the temporarily suspended measures of liberalisation and their expansion to overseas dependencies, the lowering of tariffs and measures to develop primary production in certain overseas countries. They call for a co-ordinated effort to achieve and maintain convertibility while recognising serious short-term difficulties in doing so.]

COUNCIL OF EUROPE. A Few Aspects of Population and Economy. Statistical study of certain aspects of the structure of population and of the economies of the member states of the Council of Europe. Strasbourg: Council of Europe, 1952. 9″. Pp. 62.

[This consists of a series of statistical tables relating to the member states of the Council of Europe. The tables provide basic statistics on population, production, employment, foreign trade and national incomes, mostly derived from the U.N. *Monthly Bulletin of Statistics* and similar sources.]

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. Seventh Annual Report, 1951–1952. Washington, D.C.: International Bank for Reconstruction and Development, 1952. 11″. Pp. 64.

[This report contains the usual survey of the Bank's activities, in which the provision of technical assistance, especially to countries in Latin America, has recently occupied an increasingly important place.]

INTERNATIONAL MONETARY FUND. Summary Proceedings of the Seventh Annual Meeting of the Board of Governors, September 1952. Washington: International Monetary Fund, 1952. 9″. Pp. 270.

[The proceedings reported consist chiefly of brief statements by the leaders of the delegations of the countries represented on the Board of Governors.]

UNITED NATIONS. Economic Survey of Europe Since the War. A reappraisal of problems and prospects. Prepared by the Research and Planning Division of the Economic Commission for Europe. Geneva: United Nations Department of Economic Affairs, 1953. 11″. Pp. 385. 25*s*.

[To be reviewed.]

UNITED NATIONS. Demographic Yearbook, 1952. New York: United Nations Statistical Office & Department of Economic Affairs, 1953. 11½″. Pp. 518. 45*s*.

[In accordance with the principle previously laid down for this year-book of

concentrating in each issue on a particular aspect of demographic statistics, the present issue deals in detail with the geographical distribution of population, drawing on the available results of censuses conducted in 1950 and 1951. An introductory chapter is included on urban trends and characteristics.]

UNITED NATIONS. A General Economic Appraisal of Libya. New York: United Nations Technical Assistance Administration, 1953. 11″. Pp. iii + 55. 4*s*. 6*d*.

[This report was prepared by a mission appointed by the United Nations as a necessary preliminary to a programme of technical assistance to the newly independent country of Libya. It brings together factual and statistical information on all aspects of the Libyan economy. It starts with the geographical, demographic, social and administrative background. It goes on to agricultural and industrial production, public finances, the monetary and banking systems, savings, investment, credit facilities, prices, internal and foreign trade, wages, the standard of living and national income estimates. Finally, there is an account of economic policies and development possibilities. The conclusions are discouraging but thoroughly realistic: "It has been shown that Libya's population is, on the whole, illiterate and unskilled in modern production techniques, that domestic savings are insignificant, and that the country—in so far as is known at present—is almost destitute in raw materials and sources of energy. The only appreciable natural resources which it possesses can be exploited only by cultivation and pasture. For a long time to come, therefore, the natural line for economic development will be agriculture and animal husbandry."]

UNITED NATIONS. Government Accounting and Budget Execution. New York: United Nations Department of Economic Affairs, 1953. 9″. Pp. 90. 5*s*.

[This document has a rather narrower scope than its title might be taken to suggest. Its subject matter is not chiefly the means of setting out the government accounts in such a way as to bring out most clearly their economic significance, but rather the alternative methods of reconciling full accountability in government spending with a reasonable degree of flexibility. Useful details are given of the government accounting methods followed in four selected countries, France, the Netherlands, Sweden and the United States.]

UNITED NATIONS. Governmental Policies Concerning Unemployment, Inflation and Balance of Payments 1951–52. New York: United Nations Department of Economic Affairs, 1953. 9″. Pp. iii + 135. 7*s*. 6*d*.

[This report is based on the answers to a questionnaire submitted to governments by the Secretary-General of the United Nations in February 1952. This questionnaire is now circulated annually. The purpose of the inquiry is stated to be not so much to obtain data about economic conditions generally as to "provide the means for a periodic review of the extent to which governments have responded to the recommendations of the United Nations with respect to national and international full employment policies." The report is chiefly taken up with a country-by-country summary of replies to each particular question.]

UNITED NATIONS. Instability in Export Markets of Under-developed Countries. New York: United Nations Department of Economic Affairs, 1953. 11″. Pp. iii + 94. 7*s*. 6*d*.

[This is a statistical study devoted to measuring fluctuations rather than explaining them or suggesting means to reduce them. Its contents consist chiefly of measures of the amplitude of year-to-year, cyclical, long-term and within-year fluctuations in the price, volume and value of the exports of eighteen leading primary products from selected under-developed countries over the period 1901–50. A brief concluding chapter subjects to similar statistical treatment fluctuations in foreign-exchange earnings other than export proceeds. Some interesting results emerge. Fluctuations in volume have on the whole contributed more to the instability of export proceeds than have fluctuations in price, whether reckoned on a year-to-year or on a cyclical basis. Year-to-year fluctuations in both price and volume have been more violent in 1946–50 than in either 1901–13 or 1920–39.]

UNITED NATIONS. Statistical Yearbook, 1952. Prepared by the Statistical Office of the United Nations Department of Economic Affairs. New York: United Nations, 1953. 11½". Pp. 3 + 554. 45*s*.

[This is the fourth year of issue of the *Statistical Yearbook*. It follows fairly closely the lines laid down in the 1951 issue, with various improvements and additions. A useful innovation is the introduction of separate figures for private and official loans and gifts in the balance-of-payments tables.]

UNITED NATIONS. A Study of Trade between Latin America and Europe. Prepared by the secretariats of the Economic Commission for Latin America, the Economic Commission for Europe and the Food and Agriculture Organisation of the United Nations. Geneva: United Nations, 1953. 11". Pp. 117. 9*s*.

[The starting point of this useful and interesting study is the fact that the volume of trade between Europe and Latin America was still in 1951 substantially lower than it had been in 1913. The authors analyse with a wealth of statistical data the causes that have led to the increased importance of the United States in Latin America's foreign trade, which has been accompanied by the development of a dollar shortage for many of the largest Latin American states. In considering the circumstances in which the needed expansion in trade with Europe might be achieved, the authors lay stress on the inadequacy for the future of the traditional pattern of European exports (largely textiles and other consumer goods), especially in countries in southern Latin America where the tie with Europe is strongest. In the smaller northern states, the demand for imported consumer goods is still high, but the ample supply of dollars earned by these countries makes it particularly difficult for European exporters to establish a footing. The report concludes with detailed studies of trade in seven commodities: coffee, sugar, cotton, linseed and linseed oil, wool, meat, textile machinery and tractors.]

UNITED NATIONS DEPARTMENT OF ECONOMIC AFFAIRS. Economic Survey of Asia and the Far East 1951. Prepared by the Secretariat of the Economic Commission for Asia and the Far East. New York: United Nations (London: H.M. Stationery Office), 1952. 9". Pp. iii + 400. 17*s*. 6*d*.

[To be reviewed.]

UNITED NATIONS DEPARTMENT OF ECONOMIC AFFAIRS. Mobilisation of Domestic Capital in Certain Countries of Asia and the Far East. Prepared by the Secretariat of the Economic Commission for Asia and the Far East. New York: United Nations (London: H.M. Stationery Office), 1952. 9". Pp. iii + 239. 11*s*.

[This study begins with a general discussion of the economic background of the group of Asiatic countries, their central banking facilities, the money and capital markets, and the role of governments as mobilisers of domestic resources. It then goes on to more particular studies of these questions in Burma, Ceylon, India, Indonesia, the Philippines and Thailand. The general conclusion is that even moderate development requires savings beyond existing capital resources. "The low level of income means that it is probably impossible, by voluntary means alone, to mobilise the resources needed. Fiscal measures of government have therefore become a dominant factor in the mobilisation of resources in the region."]

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE. Annual Bulletin of Transport Statistics 1951. Third Year. Prepared by the Transport Division. Geneva: United Nations (London: H.M. Stationery Office), 1953. 11". Pp. iii + 84. 80 c.

[This year's bulletin follows the general lines laid down in its two predecessors, with the addition of a short chapter on the importance of the transport industry in the economies of the various countries covered.]

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION. Geography Teaching for International Understanding. UNESCO and its Programme, VII. Paris, UNESCO, 1952. 8½". Pp. 37.

[A report on some of the matters discussed at an international seminar on the teaching of geography held at MacDonald College near Montreal under the auspices of UNESCO in the summer of 1950.]

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION. The Right to Education. UNESCO and its Programme, VIII. Paris: UNESCO, 1952. 8½". Pp. 54.

[An assessment of the world's educational problem, together with an account of some of the achievements of UNESCO in the advancement of education in backward countries.]

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION. Community Organisation for Irrigation in the United States. Prepared by F. Adams. FAO Development Paper No. 19. Rome: FAO, 1952. 9". Pp. 39. 2*s*. 6*d*.

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION. Farm Management Investigations for Agricultural Improvement. Prepared by W. Y. Yang. FAO Development Paper No. 20. Rome: FAO, 1952. 9". Pp. 36. 2*s*. 6*d*.

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION. Some aspects of Surface Water Development in Arid Regions. By A. De Vajda. FAO Development Paper No. 21. Rome: FAO, 1952. 9". Pp. 45. 2*s*. 6*d*.

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION. Digest of Plant Quarantine Regulations. Prepared by Lee Ling. FAO Development Paper No. 23. Rome: FAO, 1952. 9". Pp. 164. 10*s*.

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION. Cereal Breeding Procedures. By J. B. Harrington. FAO Development Paper No. 28. Rome: FAO, 1952. 9". Pp. 122. 6*s*. 3*d*.

[These five pamphlets are recent additions to the series of Development Papers published by the FAO.]

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